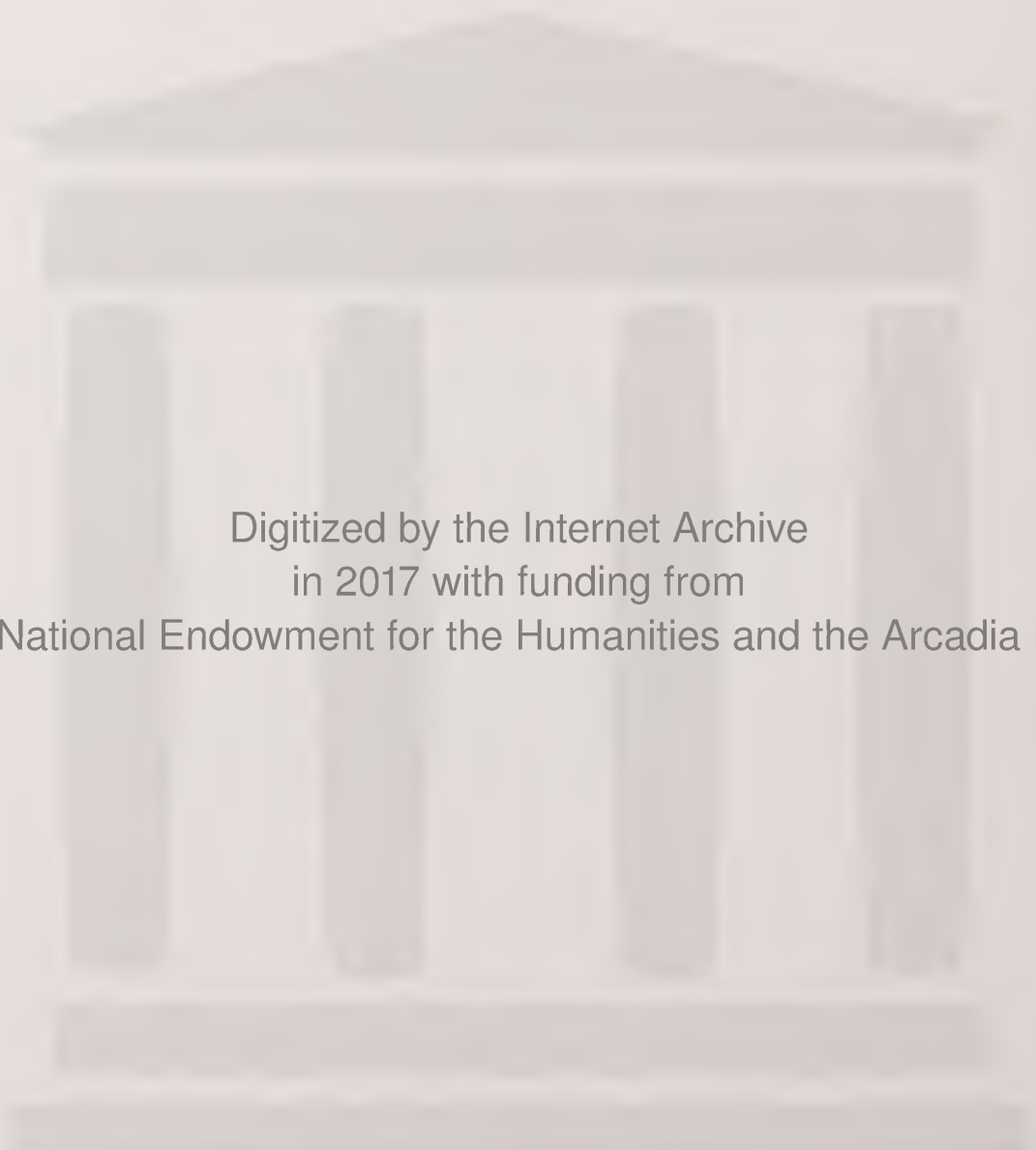


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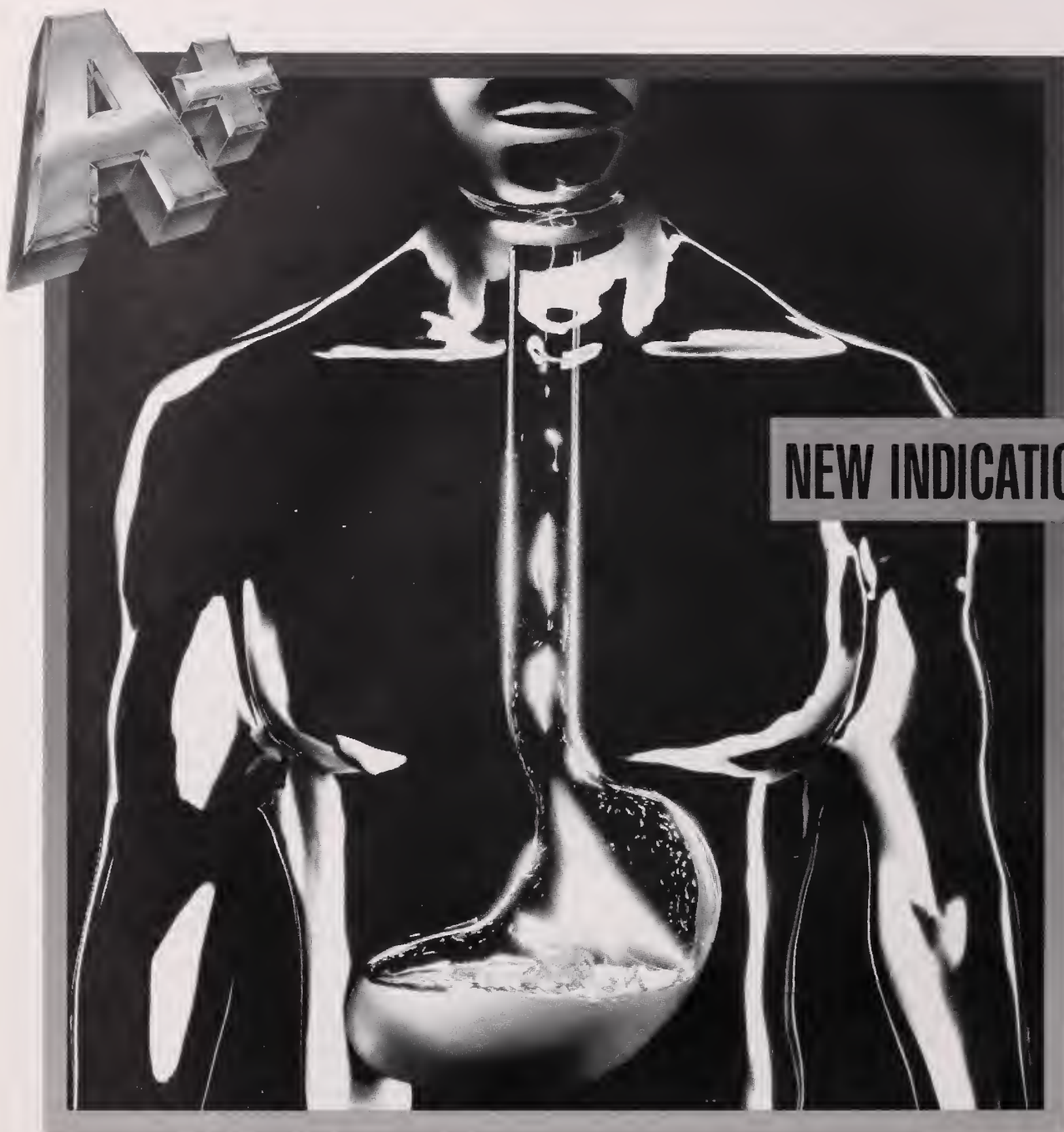
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**ON THE COVER**



Longtime Okeene physician Claude H. Williams, MD, is the subject of this month's Leaders in Medicine biography. Story begins on page 24.

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**Indications and Usage:** 1. *Active duodenal ulcer*—for up to 8 weeks of treatment at a dosage of 300 mg h.s. or 150 mg b.i.d. Most patients heal within 4 weeks.

2. *Maintenance therapy*—for healed duodenal ulcer patients at a dosage of 150 mg h.s. at bedtime. The consequences of therapy with Axid for longer than 1 year are not known.

3. *Gastroesophageal reflux disease (GERD)*—for up to 12 weeks of treatment of endoscopically diagnosed esophagitis, including erosive and ulcerative esophagitis, and associated heartburn at a dosage of 150 mg b.i.d.

**Contraindication:** Known hypersensitivity to the drug. Because cross sensitivity in this class of compounds has been observed, H<sub>2</sub>-receptor antagonists, including Axid, should not be administered to patients with a history of hypersensitivity to other H<sub>2</sub>-receptor antagonists.

**Precautions:** General—1. Symptomatic response to nizatidine therapy does not preclude the presence of gastric malignancy.

2. Dosage should be reduced in patients with moderate to severe renal insufficiency.

3. In patients with normal renal function and uncomplicated hepatic dysfunction, the disposition of nizatidine is similar to that in normal subjects.

**Laboratory Tests**—False-positive tests for urobilinogen with Multistix<sup>®</sup> may occur during therapy.

**Drug Interactions**—No interactions have been observed with theophylline, chlorazepoxide, lorazepam, lidocaine, phenytoin, and warfarin. Axid does not inhibit the cytochrome P-450 enzyme system; therefore, drug interactions mediated by inhibition of hepatic metabolism are not expected to occur. In patients given very high doses (3,900 mg) of aspirin daily, increased serum salicylate levels were seen when nizatidine, 150 mg b.i.d., was administered concurrently.

**Carcinogenesis, Mutagenesis, Impairment of Fertility**—A 2-year oral carcinogenicity study in rats with doses as high as 500 mg/kg/day (about 80 times the recommended daily therapeutic dose) showed no evidence of a carcinogenic effect. There was a dose-related increase in the density of enterochromaffin-like (ECL) cells in the gastric oxyntic mucosa. In a 2-year study in mice, there was no evidence of a carcinogenic effect in male mice, although hyperplastic nodules of the liver were increased in the high-dose males as compared with placebo. Female mice given the high dose of Axid (2,000 mg/kg/day, about 330 times the human dose) showed marginally statistically significant increases in hepatic carcinoma and hepatic nodular hyperplasia with no numerical increase seen in any of the other dose groups. The rate of hepatic carcinoma in the high-dose animals was within the historical control limits seen for the strain of mice used. The female mice were given a dose larger than the maximum tolerated dose, as indicated by excessive (30%) weight decrement as compared with concurrent controls and evidence of mild liver injury (transaminase elevations). The occurrence of a marginal finding at high dose only in animals given an excessive and somewhat hepatotoxic dose, with no evidence of a carcinogenic effect in rats, male mice, and female mice (given up to 360 mg/kg/day, about 60 times the human dose), and a negative mutagenicity battery are not considered evidence of a carcinogenic potential for Axid.

Axid was not mutagenic in a battery of tests performed to evaluate its potential genetic toxicity, including bacterial mutation tests, unscheduled DNA synthesis, sister chromatid exchange, mouse lymphoma assay, chromosome aberration tests, and a micronucleus test.

In a 2-generation, perinatal and postnatal fertility study in rats, doses of nizatidine up to 650 mg/kg/day produced no adverse effects on the reproductive performance of parental animals or their progeny.

**Pregnancy—Teratogenic Effects—Pregnancy Category C**—Oral reproduction studies in rats at doses up to 300 times the human dose and in Dutch Belted rabbits at doses up to 55 times the human dose revealed no evidence of impaired fertility or teratogenic effect, but, at a dose equivalent to 300 times the human dose, treated rabbits had abortions, decreased number of live fetuses, and depressed fetal weights. On intravenous administration to pregnant New Zealand White rabbits, nizatidine at 20 mg/kg produced cardiac enlargement, coarctation of the aortic arch, and cutaneous edema in 1 fetus, and at 50 mg/kg, it produced ventricular anomaly, distended abdomen, spina bifida, hydrocephaly, and enlarged heart in 1 fetus. There are, however, no adequate and well-controlled studies in pregnant women. It is also not known whether nizatidine can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. Nizatidine should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

**Nursing Mothers**—Studies in lactating women have shown that 0.1% of an oral dose is secreted in human milk in proportion to plasma concentrations. Because of growth depression in pups reared by treated lactating rats, a decision should be made whether to discontinue nursing or the drug, taking into account the importance of the drug to the mother.

**Pediatric Use**—Safety and effectiveness in children have not been established.

**Use in Elderly Patients**—Healing rates in elderly patients were similar to those in younger age groups as were the rates of adverse events and laboratory test abnormalities. Age alone may not be an important factor in the disposition of nizatidine. Elderly patients may have reduced renal function.

**Adverse Reactions:** Worldwide, controlled clinical trials included over 6,000 patients given nizatidine in studies of varying durations. Placebo-controlled trials in the United States and Canada included over 2,600 patients given nizatidine and over 1,700 given placebo. Among the adverse events in these placebo-controlled trials, only anemia (0.2% vs 0%) and urticaria (0.5% vs 0.1%) were significantly more common in the nizatidine group. Of the adverse events that occurred at a frequency of 1% or more, there was no statistically significant difference between Axid and placebo in the incidence of any of these events (see package insert for complete information).

A variety of less common events were also reported; it was not possible to determine whether these were caused by nizatidine.

**Hepatic**—Hepatocellular injury (elevated liver enzyme tests or alkaline phosphatase) possibly or probably related to nizatidine occurred in some patients. In some cases, there was marked elevation (>500 IU/L) in SGOT or SGPT and, in a single instance, SGPT was >2,000 IU/L. The incidence of elevated liver enzymes overall and elevations of up to 3 times the upper limit of normal, however, did not significantly differ from that in placebo patients. All abnormalities were reversible after discontinuation of Axid. Since market introduction, hepatitis and jaundice have been reported. Rare cases of cholestatic or mixed hepatocellular and cholestatic injury with jaundice have been reported with reversal of the abnormalities after discontinuation of Axid.

**Cardiovascular**—In clinical pharmacology studies, short episodes of asymptomatic ventricular tachycardia occurred in 2 individuals administered Axid and in 3 untreated subjects.

**CNS**—Rare cases of reversible mental confusion have been reported.

**Endocrine**—Clinical pharmacology studies and controlled clinical trials showed no evidence of anti-androgenic activity due to nizatidine. Impotence and decreased libido were reported with similar frequency by patients on nizatidine and those on placebo. Gynecomastia has been reported rarely.

**Hematologic**—Anemia was reported significantly more frequently in nizatidine than in placebo-treated patients. Fatal thrombocytopenia was reported in a patient treated with nizatidine and another H<sub>2</sub>-receptor antagonist. This patient had previously experienced thrombocytopenia while taking other drugs. Rare cases of thrombocytopenic purpura have been reported.

**Integumental**—Urticaria was reported significantly more frequently in nizatidine than in placebo-treated patients. Rash and exfoliative dermatitis were also reported.

**Hypersensitivity**—As with other H<sub>2</sub>-receptor antagonists, rare cases of anaphylaxis following nizatidine administration have been reported. Rare episodes of hypersensitivity reactions (eg, bronchospasm, laryngeal edema, rash, and eosinophilia) have been reported.

**Other**—Hyperurcemia unassociated with gout or nephrolithiasis was reported. Eosinophilia, fever, and nausea related to nizatidine have been reported.

**Overdosage:** Overdoses of Axid have been reported rarely. If overdosage occurs, activated charcoal, emesis, or lavage should be considered along with clinical monitoring and supportive therapy. The ability of hemodialysis to remove nizatidine from the body has not been conclusively demonstrated; however, due to its large volume of distribution, nizatidine is not expected to be efficiently removed from the body by this method. PV 2093 AMP

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# YOCON<sup>®</sup> YOHIMBINE HCl

**Description:** Yohimbine is a 3a-15a-20B-17a-hydroxy Yohimbine-16a-carboxylic acid methyl ester. The alkaloid is found in Rubiaceae and related trees. Also in Rauwolfia Serpentina (L) Benth. Yohimbine is an indolalkylamine alkaloid with chemical similarity to reserpine. It is a crystalline powder, odorless. Each compressed tablet contains (1/12 gr.) 5.4 mg of Yohimbine Hydrochloride.

**Action:** Yohimbine blocks presynaptic alpha-2 adrenergic receptors. Its action on peripheral blood vessels resembles that of reserpine, though it is weaker and of short duration. Yohimbine's peripheral autonomic nervous system effect is to increase parasympathetic (cholinergic) and decrease sympathetic (adrenergic) activity. It is to be noted that in male sexual performance, erection is linked to cholinergic activity and to alpha-2 adrenergic blockade which may theoretically result in increased penile inflow, decreased penile outflow or both.

Yohimbine exerts a stimulating action on the mood and may increase anxiety. Such actions have not been adequately studied or related to dosage although they appear to require high doses of the drug. Yohimbine has a mild anti-diuretic action, probably via stimulation of hypothalamic centers and release of posterior pituitary hormone.

Reportedly, Yohimbine exerts no significant influence on cardiac stimulation and other effects mediated by B-adrenergic receptors, its effect on blood pressure, if any, would be to lower it; however no adequate studies are at hand to quantitate this effect in terms of Yohimbine dosage.

**Indications:** Yocon<sup>®</sup> is indicated as a sympathicolytic and mydriatic. It may have activity as an aphrodisiac.

**Contraindications:** Renal diseases, and patient's sensitive to the drug. In view of the limited and inadequate information at hand, no precise tabulation can be offered of additional contraindications.

**Warning:** Generally, this drug is not proposed for use in females and certainly must not be used during pregnancy. Neither is this drug proposed for use in pediatric, geriatric or cardio-renal patients with gastric or duodenal ulcer history. Nor should it be used in conjunction with mood-modifying drugs such as antidepressants, or in psychiatric patients in general.

**Adverse Reactions:** Yohimbine readily penetrates the (CNS) and produces a complex pattern of responses in lower doses than required to produce peripheral alpha-adrenergic blockade. These include, anti-diuresis, a general picture of central excitation including elevation of blood pressure and heart rate, increased motor activity, irritability and tremor. Sweating, nausea and vomiting are common after parenteral administration of the drug.<sup>1,2</sup> Also dizziness, headache, skin flushing reported when used orally.<sup>1,3</sup>

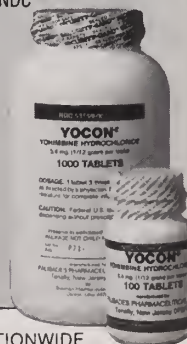
**Dosage and Administration:** Experimental dosage reported in treatment of erectile impotence.<sup>1,3,4</sup> 1 tablet (5.4 mg) 3 times a day, to adult males taken orally. Occasional side effects reported with this dosage are nausea, dizziness or nervousness. In the event of side effects dosage to be reduced to 1/2 tablet 3 times a day, followed by gradual increases to 1 tablet 3 times a day. Reported therapy not more than 10 weeks.<sup>3</sup>

**How Supplied:** Oral tablets of Yocon<sup>®</sup> 1/12 gr. 5.4 mg in bottles of 100's NDC 53159-001-01 and 1000's NDC 53159-001-10.

## References:

1. A. Morales et al., New England Journal of Medicine: 1221, November 12, 1981.
2. Goodman, Gilman — The Pharmacological basis of Therapeutics 6th ed., p. 176-188. McMillan December Rev. 1/85.
3. Weekly Urological Clinical letter, 27:2, July 4, 1983.
4. A. Morales et al., The Journal of Urology 128: 45-47, 1982.

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## An Open Letter to President Bush

The President  
The White House  
Washington, DC

Mr. President:

I write to give you my most sincere thanks, and to request your consideration of a national problem that troubles me deeply. I thank you profoundly for your brilliant achievements in world affairs, where your leadership and ideas have accomplished near-miracles in Kuwait, Eastern Europe, and in Russia. You have opened the possibility of a new plane of international amity, and the world will be eternally in your debt for what you have accomplished.

But while these momentous events have been unfolding, medical economics here in the United States have become unbearable to both patients and physicians. While the technical accomplishments of medical science have blossomed, care-giving has withered away from the effects of government programs. While the physicians can do more for patients than ever before, our patients are increasingly discontent. Many physicians are retiring early or leaving the practice of medicine. Medical student recruitment is at the lowest level ever in history. Nobody goes into rural practice nowadays, and primary care physicians are nearly impossible to obtain because of the negative effects of government programs.

The administrative office cost of servicing a Medicare patient is now about three times the cost of a private patient. The physician with a Medicare practice has daily hassles with the carrier regarding "medical necessity" justification, demands for refunds to patients, arguments over the frequency of visits and the proper computer codes for individual patient visits. Neither patients nor physicians nor the Medicare people have a clear understanding of the definition of Medicare "covered service," and bitter disagreements and arguments and spurned requests for service follow.

Federal reimbursements to Medicare physicians are now about 60% of the market value of the ser-

vices; only a few surgical procedures and hospital costs are reimbursed at near market value. Consequently, most ordinary Medicare patients have become undesirable to the nonsalaried physician, as the physician's cost of practice exceeds the reimbursement from the government program. The doctor/patient relationship has markedly deteriorated. The patients no longer trust the doctor, and the doctor no longer wants to treat the government patient.

The recent attempt at payment reform and integration of the RBRVS system has been a major fiasco. Most physicians now feel betrayed by our own government as the results of this maneuver have been made public. Unfortunately, Mr. President, your own administration will receive the blame for this ominous bumble. We physicians are presently being told to be happy that the cuts aren't as deep as originally intended!

Mr. President, I respectfully submit that the Medicare and Medicaid programs must be fundamentally restructured to remove the socialistic platform on which they are built. We have seen the future of socialism in Russia and Eastern Europe, and our own medical profession here in the United States is fast approaching a similar disintegration, for similar reasons.

The provision of medical care is basically an economic problem, just as is the provision of food, or clothing, or transportation. It is an anomaly for the government (our friends and neighbors) to provide medical care (or food) to a major group of citizens selected by age, or by any other criterion that excludes a means test. It is politically immoral to use tax moneys to buy medical care for the rich — and some Medicare beneficiaries are wealthy. It is also politically immoral to benefit the physician with tax moneys. And this particular immorality could be



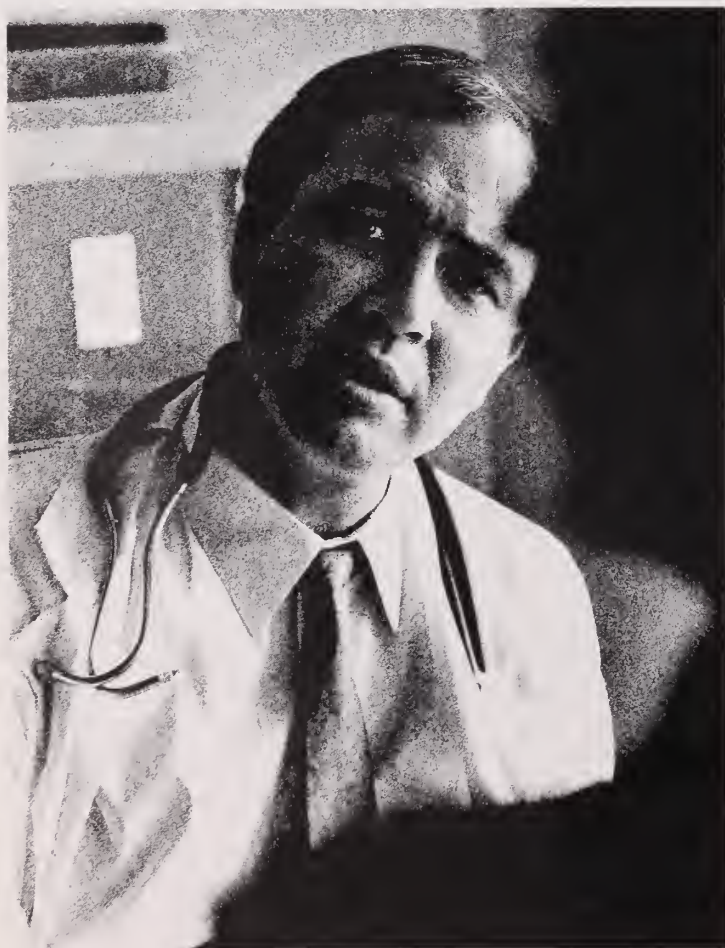
ended by sending all the Medicare benefits to the provider through the patient's hands only.

Mr. President, the 1992 election will include intense debate on health care problems. I hope you will focus your political genius on a solution to the Medicare problem. The present system must be replaced

with a system that is compatible with the principal economic system in the United States.

Respectfully yours,

*Ray V. McIntyre, M.D.*



**"We must make sure that policies are based on facts, not fears."**

Dr. Paul Volberding, Researcher, University of California, San Francisco, Member, American Medical Association

Amid the rancor of politics and budget debates, the needs of the patient are often overlooked. And, it is forgotten that it is physicians who know the most about disease and the suffering of patients.

Nowhere is this more true than with AIDS.

"Throughout the history of epidemics, there has been the possibility of reactions and policy based on fear and stigma," states Dr. Volberding.

The American Medical Association (AMA) agrees. The AMA is committed to fair AIDS policies, and to supporting researchers battling not just AIDS, but the countless diseases that ravage our society.

"What impresses me most about the AMA is its willingness to take public policy positions and its ability to influence opinion," Dr. Volberding adds.

Become a member of the AMA today.

Members of the AMA are encouraged to join their state, county and specialty societies.

**American Medical Association**

Physicians dedicated to the health of America





## My Partner

I know him as well or better than I know my two brothers. I've spent more days and nights with him than I did with my parents and yet I have a problem in writing this lead in to this month's "Leaders in Medicine" article about my partner of thirty years.

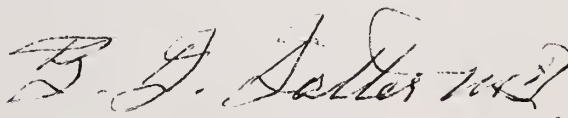
One can easily eulogize a departed loved one but I know full well he will challenge every brush stroke if the picture appears to him too bright and minimize each phrase of praise that attempts to convey my respect and admiration for



him, so I hope you get to know him better as seen through the eyes of Richard Green.

One of many Country Doctors who have served their patients well for a lifetime. Devoted husband and father, a leader in the community and his church, and my special friend and partner, Claude H. Williams, MD.

Do read about him — good men are always worth knowing. He honors our profession!





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# Changing Medical Students' Attitudes about AIDS

Jennifer Johnson, MD; Heather C. Hustzi, PhD; Larry L. Mullins, PhD

Medical students may have negative attitudes about persons with the acquired immunodeficiency syndrome (AIDS) as well as concerns about occupational infection with human immunodeficiency virus. We conducted a brief intervention to assess and modify attitudes of first-year students. The intervention was presented to small groups of students by peers, faculty, and a person with AIDS. Assessments of attitudes and knowledge were conducted one week prior to the intervention (pretest), and one (posttest 1) and 47 weeks (posttest 2) afterwards. Females had more positive attitudes about AIDS on pretest and posttest 1. Attitude scores improved significantly from pretest to posttest 1 but returned close to baseline by posttest 2. Knowledge scores were high on pretest and did not change significantly. Attitude scores were significantly correlated with knowledge, and with students' opinions regarding obligation to care for AIDS patients. Acquaintance with a homosexual was highly correlated with both scores. This intervention may serve as a model in improving students' attitudes about AIDS.

Every matriculating medical student can anticipate contact with patients with the acquired immunodeficiency syndrome (AIDS) or other disease caused by human immunodeficiency virus (HIV). Concerns about occupational infection may be heightened by negative attitudes about patients with AIDS.<sup>1</sup> These appear to be related to prejudices against the population groups in which AIDS is most prevalent.

Reports from medical schools in areas with both high and low prevalences of AIDS indicate that significant proportions of students have negative attitudes toward male patients who are homosexual or who have AIDS.<sup>1,2</sup>

Little information about the effects of medical school curricula and experience on students' beliefs and attitudes about HIV-infected patients is available.<sup>2,3</sup> Effective interventions designed to decrease students' fears of contagion or to positively impact their attitudes about patients with AIDS have not been described. An hour-long lecture on the epidemiology of AIDS failed to alter the attitudes or perceptions of risk of HIV infection of second-year medical students.<sup>2</sup> This finding is not unexpected, because strictly informational programs may be expected to increase knowledge, but not necessarily to effect corresponding changes in attitudes or behaviors.

We hypothesized that first-year students at the University of Oklahoma College of Medicine (OU-COM) would have negative attitudes about persons with AIDS. Utilizing the principles of attitudinal change, we designed an intervention to increase students' positive attitudes about these patients. We hypothesized that interaction with persons with AIDS in a non-clinical environment as well as role modeling by peers and faculty would facilitate the development of positive social attitudes towards persons with AIDS.

## Method

**Subjects.** First-year medical students at OU-COM participate in a required course entitled "Introduction to Clinical Care". The course includes two-hour small group sessions preceded by a 30-minute lecture. Each

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small group is composed of 10-12 students and one faculty clinician. Students enrolled during the 1988-1989 academic year participated in the intervention described below. This study was approved by the Institutional Review Board of the University of Oklahoma Health Sciences Center.

**Interventions.** For the second of two sessions on medical ethics, students were assigned readings related to AIDS, HIV antibody testing, and the physician's obligation to treat persons with HIV infection. The lecture by one of the authors (JJ) addressed the manner in which decisions regarding behavior towards patients with HIV infection related to ethical principles previously discussed in the course. It discussed stresses which might be experienced by physicians caring for such patients. A person with HIV/AIDS and a medical student AIDS educator attended each small group meeting. The AIDS educators had participated in a speaker's training conducted by the Oklahoma State Department of Health. They made 45-minute presentations to the groups. For the remainder of the discussion period, the person with HIV/AIDS shared personal and social aspects of their experiences as persons with HIV/AIDS and described their encounters with the health care system since diagnosis.

**Instruments.** *Attitude assessment.* A survey developed to measure the attitudes of high school students toward persons with AIDS was amended for this study.<sup>4</sup> Students' opinions regarding physicians' obligation to care for AIDS patients and obligation to obtain informed consent prior to HIV testing were also solicited. Students responded to statements using a five-point Likert scale, ranging from "strongly agree" to "strongly disagree." Examples of statements include "anyone who has AIDS must be gay," and "I would be willing to be friends with someone who has AIDS." Possible scores ranged from 13 to 65, with a lower score indicating more positive attitudes towards patients with AIDS.

*Knowledge assessment.* A previously developed survey<sup>4</sup> was amended for use in this study. The instrument consisted of a total of 42 separate items. Examples of items include: "AIDS can be spread by donating (giving) blood"; and "persons at high risk for AIDS include health care professionals who care for AIDS patients." Each item was answered on a five-point Likert scale ranging from "definitely yes" to "definitely no." Answers were assigned a weighted score based on correctness. The most correct answer received five points. Three physicians with specialized experience in AIDS reviewed the questions for clarity; all agreed

on the correct answers. The total possible score ranged from 42 to 210, with higher scores indicating greater knowledge about HIV/AIDS.

**Procedure.** Knowledge and attitude questionnaires were administered together. Students were assured that their responses would remain anonymous. The questionnaire was first administered in the small group sessions in March 1989, the week prior to the intervention (pretest). The following week, intervention sessions were conducted. One week later, the students completed the questionnaire again (posttest 1). In March 1990, 48 weeks after the pretest, the questionnaire was administered for a third time (posttest 2). Posttest 2 was given during a lecture course, where attendance is optional.

**Statistical Analysis.** Statistical analysis was performed using the Statistical Analysis Systems package, version 5.18 (SAS). A 2 X 3 (sex, time) repeated measures analysis of variance (ANOVA) was performed for each dependent measure. Tukey's procedure was used to identify significant mean differences ( $P < .05$ ). The Geisser-Greenhouse correction was used to correct for violation of the assumption of homogeneity of variance, and the consequent positive bias in the  $F$  test. Pearson's zero-order correlations were computed for critical dependent measure variables to examine the relationship between knowledge and attitude scores and additional survey items.

## Results

**Subjects.** Of the 144 first-year students, 68 completed all three questionnaires, (43 males, 25 females).

**Attitude Assessment.** Mean attitude scores for students completing all three surveys are shown in Figure 1. The 2 X 3 repeated measures analysis of variance for attitudes about AIDS demonstrated significant main effects for Time,  $F(2,65)=15.71$ ,  $P=.0001$ ; and Sex,  $F(1,66)=6.79$ ,  $P=.011$ . Scores on the attitude survey were significantly lower on posttest 1 than on pretest or on posttest 2 for both sexes, indicating a significant increase in positive attitudes about AIDS after the intervention. The change in attitudes was not maintained over the ensuing months. Female students had significantly lower attitude scores, reflecting more positive attitudes about AIDS, than did male students at pretest and at posttest 1. Although scores of females were also lower than those of males at posttest 2, the difference was no longer significant.

**Knowledge Assessment.** Mean knowledge scores for students completing all three surveys are shown in Figure 1. The 2 X 3 repeated measures analysis of

variance for AIDS knowledge scores revealed no significant main effects or interactions. Thus, the AIDS knowledge scores did not change from pretest to posttests. Scores of males and females did not differ significantly.

**Correlation Between Knowledge and Attitudes.** To examine the relationship between knowledge and attitudes, Pearson's zero-order correlations were computed for selected variables. There is a significant negative correlation between knowledge and attitude scores at each time the instrument was administered. Higher levels of knowledge are associated with more positive attitudes. In addition, students' agreement with the following two statements was strongly correlated with attitude, but not with knowledge, scores: "physicians should be required to provide care for AIDS patients"; and "informed consent should be obtained before tests for antibodies to the AIDS virus are ordered."

Correlations for items added at posttest 2 with attitude scores were also calculated. Personal acquaintance with someone with HIV/AIDS was not correlated with knowledge or attitude scores ( $R^2=.11$ ), but acquaintance with a homosexual was highly correlated with both knowledge and attitude scores ( $R^2=.55$ ). Students with more positive attitude scores were significantly more likely to view caring for AIDS patients as interesting ( $R^2=.56$ ).

## Discussion

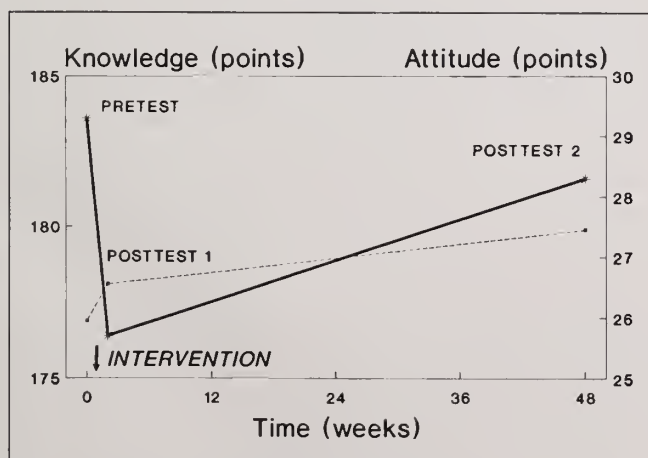
In this study, a brief intervention significantly increased OU-COM medical students' positive attitudes towards persons with AIDS. This is an impor-

tant finding, given that previous studies<sup>4,5</sup> have found that it is difficult to produce shifts in attitudes towards patients with AIDS. Although the effect of the individual components could not be assessed, the positive role modeling of medical student peer educators and of faculty may have been quite significant. Direct personal contact with a person with AIDS may also have had a large effect. The lack of persistence of attitude changes is consistent with findings of other investigators,<sup>4</sup> and suggests that additional sessions may be needed to maintain attitudinal change.

Sex differences in AIDS attitudes as described here, with females having more positive attitudes, have been reported previously in studies of health care professionals.<sup>3,6</sup> Previous studies have suggested that negative attitudes towards male homosexuality may be a factor in negative attitudes towards persons with AIDS.<sup>4,7</sup> This is corroborated by the positive correlations between attitude score and acquaintance with a homosexual in this study. Because this gender difference in attitudes towards AIDS patients has been found across several studies, it appears to be robust.

Students did not evidence significant changes in knowledge scores. Their pretest knowledge scores were high compared with those of the general public. Therefore, the lack of change in posttest scores may represent a ceiling effect. In addition, the intervention focused on changing attitudes; the content of the presentation by the medical student AIDS educators received less emphasis. No formal effort was made to standardize the content of the informational session. The lack of change in knowledge scores may have been the result of these factors.


Knowledge about AIDS and attitudes towards persons with AIDS were moderately correlated on the pretest. Such correlations are similar to those found in other studies of medical and nursing students.<sup>8</sup> Attitude scores correlate negatively with knowledge scores, indicating that students with more knowledge about AIDS had more positive attitudes towards persons with the disease. These findings suggest that increasing factual knowledge about AIDS may be a necessary but not sufficient program component to positively affect attitudes about persons with AIDS. Our findings suggest that students' attitudes about AIDS are also modestly but significantly correlated with their views on physicians' obligation to provide care for AIDS patients and to obtain informed consent prior to HIV antibody testing. Medical students with positive attitudes about persons with AIDS thus appear more willing to provide care for them and to



**Figure 1. Knowledge and Attitude Scores.** Mean scores for \*—\* knowledge and •---• attitude ( $n=68$ ). Attitude scores on posttest 1 were significantly lower than on pretest ( $p=.0001$ ).



respect their patients' wishes regarding HIV antibody testing.

Our brief intervention had a positive effect on students' attitudes. Additional "booster" sessions throughout professional training might help maintain positive attitudes towards patients with AIDS. Such sessions would also provide a forum to share realistic concerns and to decrease the stresses associated with providing care for these patients. Finally, as others<sup>9</sup> have noted, the AIDS epidemic provides an opportunity to promote the development of empathy and to facilitate trainees' experiencing the rewards of providing comfort when technology fails. As Ben Franklin said, "to bear other people's afflictions, everyone has courage and enough to spare." 

#### Acknowledgments

This project was partially funded by a subcontract from the University of Texas, Houston, AIDS Regional Education and Training Center (PHS 6025-1, CFDA 13.145). The authors gratefully acknowledge May Jo Hull and Barbara Harris for assistance with manuscript preparation. We thank the faculty and students at OU-COM who participated in this project.

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**Y**ou must always be students, learning and unlearning till your life's end, and if, gentlemen, you are not prepared to follow your profession in this spirit, I implore you to leave its ranks and betake yourself to some third-class trade.

— Joseph, Lord Lister

# A College of Medicine Without Walls: Continuing Medical Education

Patrick A. McKee, MD; Robert Whang, MD

**The University of Oklahoma Department of Medicine may soon be bringing continuing medical education opportunities right to the physician's doorstep.**

**T**he exponential growth of knowledge in medicine continues at such a pace that practitioners and academicians often find themselves overwhelmed. Medical journals proliferate and many conference and symposium opportunities are presented to physicians. Most meetings are out of town and inconvenient for the practitioner to attend and frequently they are excessively expensive.

Adequate coverage of complex medical issues requires more than weekly or monthly one-hour hospital conferences. Certainly efforts to present medical education in after-dinner talks are more apt to promote lapses into post-cibum slumber than learning. All agree that continuing medical education is absolutely essential and critical for retaining a high degree of competence in the practice of medicine. To this end, hospitals and medical associations mandate documentation of physician participation in educational activities, but despite such requirements, quality is not always assured.

Oftentimes this state's academic medical center has been perceived as lacking commitment to continuing medical education. Practicing physicians have on more than one occasion suggested that we have not given this enough attention. We want to change this

perception, but in doing so we also want to break with usual and customary postgraduate education approaches, and instead present concentrated, focused subject matter during most of one day. By presenting a list of topics from which practitioners might choose, and by asking local physicians to join with us in presenting these conferences, we believe we actually might foster and nurture the concept of a "university medical center *without walls*" as we all try to remain engaged in a lifetime of learning.

After considerable thought and discussion, the Department of Medicine at the University of Oklahoma College of Medicine has now developed a menu of topics for a one-day seminar/workshop that can be given in any hospital or other appropriate setting in the state. Each year we propose to list topics for each internal medicine subspecialty so that practitioners can select those most useful to them. To be emphasized is that our faculty will come to practicing physicians. Besides recognizing the difficulty that practicing physicians have in attending conferences held in distant cities, we also realize that even the timing of locally presented seminars becomes critical for practitioners to attend. Therefore, the Department of Medicine faculty will include Saturday as an optional day for presentations. Having a local practicing physician or two participate with us by delivering a lecture, or patient presentation, etc, during these sessions is an attempt to tailor these conferences as closely as possible to local interests.

We will work with physicians, county medical groups, hospital medical education directors, etc, to

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**Table 1. Proposed Conference Topics**

**Cardiology**

Management of cardiac arrhythmias  
Management of atherosclerotic heart disease

**Endocrinology**

Complications related to diabetes mellitus:  
Nephropathy  
Neuropathy  
Retinopathy  
Infections  
Endocrine problems (non-reproductive) special to women:  
Osteoporosis  
Hirsutism  
Postmenopausal estrogen replacement  
Auto-immune diseases  
Hypertension, diagnostic, and management problems:  
Diabetes and hypertension  
Atherosclerosis and hypertension  
Gout and other metabolic problems

**Hematology/Oncology**

Breast cancer: early detection and management  
Transfusion therapy: principles and practice in 1991

**Infectious Disease**

Management of HIV-infected patients  
Some vector-borne diseases encountered in Oklahoma—  
rickettsioses and Lyme disease

**Nephrology**

Practical management of fluid-electrolyte disorders  
Practical management of acid-base disorders  
Disorders of divalent cation metabolism  
Preserving renal function in the diabetic-hypertensive patient

**Pulmonary Disease and Critical Care**

Asthma  
Smoking cessation: Technologies for the 1990s

**Rheumatology**

New rheumatic disease syndromes: Update  
Lyme disease  
AIDS related rheumatic disease  
Syndromes: Reiter's syndrome, psoriasis  
Polymyositis  
Anti-phospholipid syndrome  
Parvovirus arthritis  
Diagnosis and therapy of polyarthritis  
The physical examination  
Use of the laboratory  
Use of X-rays  
Therapy for selected diseases: eg, rheumatoid arthritis

**The "New Biology"**

Understanding and manipulating genes  
Relationship of protein structure to biologic function  
Hormone-receptor and other protein-receptor specific interactions that stimulate cellular function  
Diagnosis of common diseases (hereditary and acquired) by molecular and genetic approaches  
Future of gene therapy

ensure that these conferences meet their needs. We do want to maintain these seminars along subspecialty lines and will not cross subspecialties or "mix" lectures, eg, give some hematology/oncology lectures, one or two infectious disease lectures, etc. Instead, our intent is to cover topics in detail so as to maximize the potential for mastering a particular area. Proposed conference topics are listed in Table 1. Sections of this department which will participate in this program include cardiology, endocrinology, hematology/oncology, infectious disease, nephrology, pulmonary disease, critical care, and rheumatology.

Importantly, the initiation of interest in having a program presented must come from practicing physicians, hospitals, medical societies, etc, and we welcome your suggestions and responses. There are certain costs attached to this proposed program which are being addressed by the Department of Continuing Medical Education at the university. This information will be mailed to those hospitals and county medical societies interested in participating in this program.

Together with our colleagues in practice, the faculty in the Department of Medicine views this proposed joint venture in continuing medical education as an important function and assigns it high priority. We look forward to responding to requests from throughout the state. □

**Acknowledgment**

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# The University of Oklahoma College of Public Health and the American Indian

Everett R. Rhoades, MD

This article illustrates how the relationship between the University of Oklahoma College of Public Health, the American Indians, and the Indian Health Service is especially appropriate to the state of Oklahoma. It reviews the development of the College of Public Health as an important component of the university and the state of Oklahoma. Included are observations about the special contributions made by American Indians to both the nation and to the state, as well as reflections upon the development of public health in the young nation and in the newly forming state of Oklahoma.

A crucial event in the establishment of both the state and the University of Oklahoma was the contribution by the Creek and Seminole tribes of their "Unassigned Lands" so that the Territory of Oklahoma could be established.<sup>1</sup> The significance of the cession of this land by the Indian tribes has been overshadowed by the drama of the "sooners," the "boomers," and the run of April 22, 1889, but it was the contribution by the tribes, not the run, which made possible the development of the state of Oklahoma and all that was to follow.

The opening of the Unassigned Lands marked the beginning of the state of Oklahoma, of course, but it also was one of the major events marking the end of

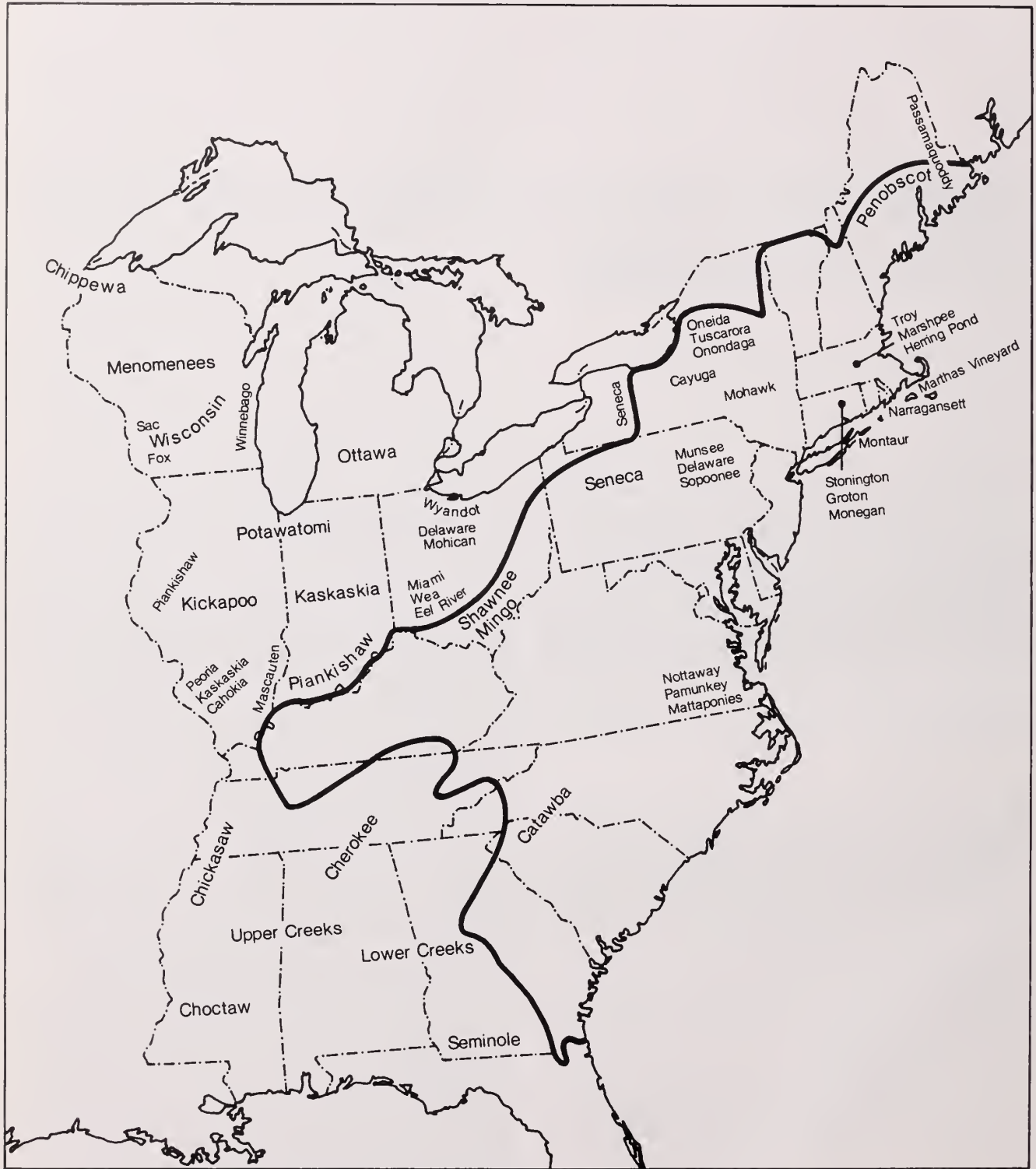
the first century of the new nation. We could have celebrated the bicentennial of formation of the nation as well as the centennial of the establishment of the university. For example, on April 30, 1789, almost to the week one hundred years before the opening of the Unassigned Lands, General George Washington took office as the first President of the United States. The first Congress, with 26 senators and 65 representatives, convened in New York City, July 9, 1790.<sup>2</sup> Beyond the Mississippi River, which formed the western boundary of the United States, was a vast unexplored wilderness inhabited by aboriginal peoples, claimed mostly by Spain. Only about 29% of the United States was "settled."<sup>2</sup> One of the interesting ironies of Indian history is that some of the same tribes ceding the lands which permitted the formation of the original United States (Fig 1) were once again called upon to give up the Unassigned Lands so that the State of Oklahoma could be born.

## Development of Public Health in America

As the nation took form after 1798, dramatic demographic changes created the need for, and determined the nature of, new concepts and activities to protect the health of the country's rapidly expanding population. One of the most profound of these changes was the extraordinary growth of the cities, which, with its attendant crowding, required new measures for the provision of safe food, water, shelter, and waste disposal. Terrible sanitary conditions in city tenements prompted municipal leaders to seek ways to deal with outbreaks of highly fatal contagious diseases. According to Blake,<sup>3</sup> "The move from the country to the

The views expressed are the views of the author and are not to be taken as official policy of the Public Health Service. Based upon lecture to the Alumni Association of the College of Public Health during the centennial program of the University of Oklahoma, Oklahoma City, Oklahoma, October 27, 1990.

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From: US Bureau of Census. "A Century of Population Growth from the First Census of the United States to the Twelfth. 1790-1900"

**Figure 1.** The United States in 1790, its first year. The tribes ceding lands in the southeast later ceded the Unassigned Lands so that Oklahoma Territory could be formed.

cities in the last half of the nineteenth century forced attention to public health. Public spirited laymen advanced municipal public health practices from almost nothing to a vigorous and useful function of local government." Thus, public health was to a large extent developed by city governments. The first board of health was probably set up in Petersburg, Va, in 1780, and New York, Baltimore, and Boston set up similar programs in the early 1790s.<sup>3</sup> One example of the many advances during this period was the development of sand filtration, making possible the provision of safe water for large numbers of people living close together, and which was credited with decreasing a very high incidence of typhoid in Lawrence, Mass, in 1893.<sup>3</sup>

According to Blake,<sup>3</sup> the recent development of the science of bacteriology and techniques for identifying microorganisms permitted the establishment of laboratories, which in turn allowed the collection of accurate information for use by newly formed municipal health boards. "These laboratories, of which the first was in Providence in 1888, and boards of health provided the basis of the public health movement in the US. Early work was in the manufacture of antisera and vaccines, and controlling water, milk, and food-borne diseases. New York City pioneered in the development of many of these elements."<sup>3</sup> For example, "In 1890, New York City began issuing the first pamphlets giving information of the contagious nature of tuberculosis (white plague) and on means to prevent its spread."<sup>3</sup> Thus, at the time of the run into the Unassigned Lands and the establishment of the University of Oklahoma, a young public health movement was rapidly expanding throughout the nation, making necessary the development of a knowledge base and public health workers of various specialties.

## **Public Health in Oklahoma Territory**

A delightful and scholarly but almost unknown monograph by Dr Bernice Crockett, formerly on the faculty of Southeastern State College, describes the development of Public Health in Oklahoma. Crockett<sup>4</sup> describes three distinct phases in the development of public health in Oklahoma:

**1. Efforts of the federal government to deal with the health of Indians, 1830-1890.** During this period, except for well-trained physicians who were members of the Five Civilized Tribes, the delivery of health care and public health measures were almost entirely the function of the federal government, either through military establishments or as part of tribal

activities among those tribes moved to the Indian Territory.

**2. The Oklahoma Territorial Board of Health 1890-1907.** During this period, health affairs in the Indian Territory remained in the hands of the various tribes but in the Oklahoma Territory, public health matters were implemented through a territorial board of health and various county boards.

**3. Creation of a State Department of Health in 1907 and its growth into a powerful force within the State of Oklahoma.**

According to Crockett,<sup>4</sup> George W. Steele of Indiana, the first governor of Oklahoma, came to the capital city of Guthrie in May 1890, following passage of the Organic Act which established Oklahoma Territory. County governments were set up, and after a census was taken, delegates for a Legislative Assembly were elected on the basis of population. The federal census of 1890 showed the Indian Territory had a population of 179,321, of which 50,616 were Indians. The population of Oklahoma Territory was given as 61,834. An interesting observation about early census enumeration in the state is the following: "The returns on the Indians are subject to some degree of uncertainty 'because of the practice of treating as Indians all persons having any trace of Indian blood . . . and . . . rendering preceding censuses incorrect.'"<sup>5</sup> This problem has been far from resolved in the nearly one hundred intervening years.

"Oklahoma Territory's first legislature convened on the 27th day of August, 1890, and brought into 'immediate association the local prejudice and legislative preferences of nearly every state and territory with this Government.'"<sup>6</sup> Governor Steele appointed J.A. Overstreet, MD, of Kingfisher as superintendent of health.<sup>4</sup> At the organizational meeting of the Oklahoma Territorial Board of Health in Guthrie, April 16, 1891, county boards of health were established, to be chaired by the county superintendent of schools. The Territorial Board was made up of the superintendent of health, the superintendent of public instruction, and a physician, C.F. Waldron, MD. The salary of the territorial superintendent of health was \$500 per year with an expense account not to exceed \$300.<sup>4</sup> Many aspects of public health today are reminiscent of conditions in those pioneering days, as illustrated by Dr Overstreet's first report, in which he stated that the amount of money allowed for the territorial superintendent of health for salary and expense was "totally inadequate."<sup>7</sup>

The principal task of the Board in its first few years was to provide for the licensure of the large



number of physicians who had entered the territory wishing to practice medicine, many with questionable credentials.<sup>4</sup> The boards also dealt with outbreaks of contagious diseases among both humans and animals. For example, a severe smallpox epidemic in 1899 and 1900 occupied almost all of each health worker's time. "The board also reported to the governor that twenty-one cases of diphtheria with seven deaths were reported from Kingfisher."<sup>4</sup> The board's work demonstrated the fundamental importance of basic demographic data and the board advocated more complete reporting of births and deaths.<sup>4</sup>

### Public Health in the New State of Oklahoma

According to Crockett,<sup>4</sup> changes brought about by statehood were also climactic. "The dramatic events of 1907 were so great that health tended to take a back seat. Prior to 1907, each of the two territories had quite a different approach to public health."<sup>4</sup> The work of the Oklahoma Territorial board being largely the licensure of physicians and the reporting of outbreaks of contagiousness, the new state of Oklahoma found itself with "no record 'worthy of the name' to inherit, no laws to uphold, and also 'a very indifferent public to contend with.'"<sup>4</sup> Dr J.C. Mahr was appointed commissioner of health by Governor Haskell, August 25, 1908. The offices were in Guthrie with a laboratory division located at the University in Norman, directed by Edwin DeBarr with Louis Turley as bacteriologist and R. H. Dangerfield, assistant chemist.<sup>4</sup>

### The University of Oklahoma College of Public Health

The territorial government in 1890 established three colleges: the University of Oklahoma in Norman, the Oklahoma Agricultural and Mechanical College in Stillwater, and the State Normal School in Edmond.<sup>1</sup> Approximately one-half century later, the first elements of what was to become the College of Public Health took form.

Two unusual individuals played outstanding roles in the establishment of the college: Dr Kirk Mosley, who struggled to establish first a department and then a school with very little support; and the founding dean of the college, Dr William Schottstaedt. A concise description of the background of the new school is contained in the first annual report by Dean Schottstaedt<sup>8</sup>:

The School of Health, Oklahoma University, was established by action of the University Regents and the State Regents for Higher Education in the spring of 1967. It was accredited by the American Public Health Association in

June and activated by the University Regents on July 1, 1967. Wilson D. Steen, PhD, was associate dean.

The need for such a school was reflected in the increasing need for trained public health workers and the fact that the nearest schools of public health were in new Orleans, Louisiana, and Ann Arbor, Michigan.<sup>8</sup>

The goals of the School of Health as stated in the original proposal for its establishment were:

1. To prepare highly competent and imaginative health personnel concerned with community health problems and trained to approach them with a problem-solving attitude;
2. To improve the knowledge and skills of all groups and individuals interested in health problems through an active program of health education;
3. To develop an active program of community action and participation, working with interested groups and individuals towards the improvement of health;
4. To develop a research program which will contribute to the basic knowledge in public health and to demonstrate its application to personal and community health problems; and
5. To maintain flexibility of purpose and program so that the activities of the school may be responsive to the needs of the larger community despite the innovations and changes which will occur.<sup>8</sup>

A School of Public Health was established on the Norman Campus of Oklahoma University in 1948. It had a dean, a faculty, and students but was never accredited. Its dean was Dr E. Harold Hinman, now professor and chairman, Department of Preventive Medicine, Jefferson Medical College. It was discontinued in 1951 because of the high cost per student trained. Those courses pertaining to environmental sciences were transferred by Professor George Reid into the college of Engineering where he established a program in sanitary science. Dr Kirk Mosley transferred the remaining courses into the Department of Preventive Medicine and Public Health of the School of Medicine. Faculty were not available to teach the latter courses. However, the courses were activated as faculty became available. The first such was Dr Phil Smith who developed the area of parasitology since he had the responsibility of teaching this in the School of Medicine. He received a great deal of encouragement and support from Dr Teague Self at the Norman Campus. This course was followed by that of biostatistics and epidemiology, begun in 1956 under Dr Carl Doering and has continued under Jim Hagans and then Dr Edward Brandt. Following the development of biostatistics and epidemiology, Dr Mosley turned his attention to the development of a residency



**Figure 2.** At the closure of the School of Public Health on the Norman campus in 1951, Dr Kirk Mosley transferred courses into the Department of Public Health of the School of medicine, leading to the establishment of the College of Public Health. (Photo courtesy Dr Schottstaedt)

program in public health, begun in 1958, and which was unique in maintaining the clinical competencies of public health physicians while in training. It was also unique in providing stipends for graduate students in behavioral sciences. Dr Mosley also turned his attention to the development of administration by drawing upon individuals in the state health department and to administrators in the College of Medicine . . . In 1960-61, Dr Carl Nau came to the medical center to develop a program in occupational medicine . . . He proceeded to build a strong program in this area and to start a training program for physicians in environmental medicine.<sup>8</sup>

Dr Kirk T. Mosley left his position as chairman of the Department of Preventive Medicine and Public Health early in 1960. Following a year as associate dean of the School of Medicine, he became commissioner of health for the State of Oklahoma, a post he held until the summer of 1966, when he left to develop a program in family planning in Calcutta, India, for the Ford Foundation. The program developed by him included most of the areas traditionally covered by Schools of Public Health, so that the Department by 1962 was in fact functioning as a School of Public Health without that status.

Following the arrival of Dr James L. Dennis in 1964 as dean of the School of Medicine and director of the medical center, a strong boost was given to the development of a School of Public Health. . . . He felt that Oklahoma should have a school of Public Health "to provide personnel needed by the state for the protection of the health of its people." Soon after the arrival of Dr Dennis the State Regents for Higher Education initiated a self-study of medical education in Oklahoma. The report of this study recommended the establishment of a school of public health in association with the Medical Center of Oklahoma University. Planning for a school began promptly thereupon, and a plan was approved in the spring of 1967 and activation of the school took place on July 1 of that year. That fall, graduate courses were transferred from the Department of Preventive Medicine and Public Health to the School of Health and both master's and doctor's degrees in public health

were established in May 1968. All students were enrolled in the fall semester of the Department of Preventive Medicine and Public Health and transferred into the new school in January, 1968. During the spring of 1968, Dr Charles Cameron was recruited to head the Department of Health Administration from the School of Public Health in North Carolina. Dr Paul Anderson was recruited from Yale School of Public Health into the Department of Biostatistics and Epidemiology. Dr Raymond Mill came from Oklahoma State University into the Department of Environmental Health. Dr W. R. Hood was recruited from Oklahoma University in the field of social psychology into a joint appointment with the Department of Psychiatry



**Figure 3.** Dr William Schottstaedt, the founding dean of the University of Oklahoma School of Public Health. His vision and dynamism created an exciting and vigorous school with special interest in, and for, American Indians. (Photo courtesy Dr Schottstaedt)

and Behavioral Sciences of the School of Medicine and the Department of Human Ecology of the School of Health.

Space for expansion has been essential to house additional staff and enlarging programs. Though plans for a separate building are being formulated, it is not anticipated that this building will be ready for occupancy before 1972. Meanwhile, space has been needed which the medical center has not been able to provide. Therefore, the Oklahoma Health Facilities Foundation, Inc., was established as a non-profit organization to acquire properties near the medical center to house new and expanding programs. Administrative offices of the School of Health were established at 632 NE 15th Street. A Construction Committee is at work on plans for the School of Health building.<sup>8</sup>

In June of the first year, the following students were awarded degrees: Thomas M. Aaberg, MS; Elma Griesel, MS; Clay E. Simpson, PhD; and Bill L. Stevenson, PhD. In August, the following degrees were granted: Lucille Boone, MS; Jimmie L. Kingery, MS; Ralph D. Harkins, PhD; Robert W. Ketner, PhD; Edgar L. Lichti, PhD; and Eldon P. Savage, PhD.

Appointed to the residency program of the Department of Preventive Medicine and Public Health were Dr Theodore Thorburn, Dr Robert C. Bowers, Leland Fairbanks, Donald Swetter, Larry Magnuson; and Heino Rubin. Robert Delafield was appointed to a residency in aerospace medicine.<sup>8</sup>

The second annual report by Dr Schottstaedt likewise contained information which is best presented by quoting directly<sup>9</sup>:

During the first year the school had 82 graduate students as degree candidates; during this second year the number has increased to 104. Of this number, 50 were candidates for a master's degree (MS or MPH) and 54 were candidates for a doctoral degree (PhD or DrPH).

The residency in family medicine was in its initial year of operation. A function of the Department of Preventive medicine and Public Health, it has gotten off to a vigorous start and is expected to have six residents during the coming year.

Dr Schottstaedt's vision produced one of the unique departments in the country, the Department of Human Ecology, under the chairmanship of Dr John Bruhn. This department "strives toward an explanatory understanding of the interrelationships between man and his several environments and the effects of these interrelationships on human health and disease."<sup>9</sup> Commenting on this department in 1984, Dean Peter Levin recalled, "When it started in 1967, it had the very unique focus on human ecology. This was a way of acquainting medical and other students with the greater totality of the person and relating this idea of the individual in his family, in his society, and in his environment, which was quite a



progressive concept at that time."<sup>10</sup> Dr Robert Ketner served as acting chairman for part of the year. The third full-time faculty member was Dr Charles Wicke. Graduate Students included Alan Grubb, Lynn Carr, Melody Marshall, and Rebecca Walker."<sup>9</sup> The Department of Preventive Medicine and Public Health was headed by Dr Thomas N. Lynn who was also professor of medicine.<sup>9</sup>

A summary of accomplishments during the first five years of the college's existence is provided in Dr Schottstaedt's annual report for 1971-1972<sup>11</sup>:

It is now five years since the School of Health (recently designated as the College of Health) was established by Regent's action. During this first five years, growth has been steady and at a moderate pace with emphasis on establishing a firm foundation on which to build in the future.

Much of the subsequent history of the college up to the mid-eighties is provided by Hardy,<sup>10</sup> who describes the existing school building, the urgent need for space for the rapidly expanding college, the location of the school in several former residences, the optimistic plans for a separate building for the college, and the financial straits of the university in 1973, which had a devastating effect on the vigorous young College of Public Health. Hardy describes a situation that remains pertinent:

Experts graduating in the four major disciplines of the OU College of Public Health were essentially invisible to the people they served. They dealt with unseen hazards and their accomplishments were not apparent to those whom they protected. Only their failures were easy to spot. When epidemics happened, everybody knew, but their unsung triumphs in the prevention of disease usually passed unnoticed. However, these experts in environmental health, biostatistics and epidemiology, social sciences and health behavior, and health administration did more for the general health of the people than any other single branch in the entire field.<sup>10</sup>

The severe financial crisis experienced by the university in 1973 had a devastating effect on the College of Health<sup>10</sup> from which it has not completely recovered.

## **The College of Public Health and the Indian Health Service**

From its first year, the college established a close and continuing relationship with the Indian Health Service and with Indian students, including the establishment of field training activities with three Indian reservations.<sup>8</sup> Of the first group of residents, Drs Thorburn, Fairbanks, Swetter, and Rubin all subsequently played very important roles in the Indian Health Service.

Graduate students in the College of Health Administration under the chairmanship of Charles Cameron, who only last year retired as dean, included John Todd, who more than any single person assisted and guided me years later when I assumed the directorship of the Indian Health Service at a time when Dr Todd was director of Program Operations. He served, in effect, as unofficial deputy director for the first three years of my tenure. Jephtha Dalston, who had been service unit director at the IHS Hospital in Lawton, went on to a distinguished career, first at the University of Oklahoma Hospitals and then at the University of Michigan hospitals.

Another interesting relationship between the college and Indian health was the provision of space and the loan of Melody Marshall, at that time a graduate student, to the newly forming Association of American Indian Physicians in 1969 and 1970. This association, made up of fourteen physicians of Indian descent, had neither office nor funds with which to establish a viable organization. Dr Marshall served as a very able first executive director for the organization. It is unlikely that the organization would have succeeded, or survived, without this generous loan by Dr Tom Lynn and the expert developmental skills of Dr Marshall in the first two years of the association.

In his five-year report, Dr Schottstaedt summarized the rapidly developing American Indian program as follows:

An academic educational program which is expanding to involve increasing numbers of faculty and students is directed at the problem of preparing American Indians for health professional positions. For some years the Department of Community Health has offered a residency training program for physicians interested in careers in Indian Health . . . A year ago the Department of Health Administration initiated a special program for the training of American Indians for careers in administration. This began with ten Indians as graduate students; six additional students are being admitted to the program this fall . . . A special reading room collection of books and papers on the American Indian and their health problems is being accumulated and a collection of slides and teaching aids is being developed to allow seminars or courses to be given relative to Indian history and Indian heritage. In addition the Department of Community Medicine, renamed from the original Department of Preventive Medicine and Public Health, under the chairmanship of Tom Lynn offered an elective in community medicine at the IHS facility in Taos, New Mexico.<sup>11</sup>

The unfortunate loss of this unique collection of materials is a tragedy for those interested in studying Indian health, and clearly formed the basis of what could easily have become a national resource of which the state could have been proud.

Through the spring of 1991, the college will have



graduated 114 American Indian masters and doctoral candidates from a variety of tribal backgrounds. One-half of these will have served at some time in the IHS. One-half are women.<sup>12</sup> Owens and coworkers<sup>13</sup> point out that the career accomplishments and job satisfaction of the first 51 Indian graduates was not different from that of non-Indian colleagues.

## Conclusion

Public health in Oklahoma followed a burst of public health development during the last half of the nation's first century and 17 years of territorial public health. In contrast to public health concerns in Oklahoma one hundred years ago, officials now have to deal not with epidemics of diphtheria and smallpox but endemic heart disease, cancer, and disruptions associated with "life-style." In contrast to a single vaccine for smallpox, citizens now have available an extensive and growing battery of safe and effective childhood and adult immunizations. Local epidemiologic conditions remain the basis for planning and implementing interventions. Only the protection of the public from quacks and unscrupulous practitioners remains so nearly like it was one hundred years ago. In contrast to virtually no formal public health training being available at the founding of the university, a great variety of disciplines is now available to deal with the ever increasing complexity of measures to protect the health of the population.

The development of the College of Public Health under the dedicated and visionary individuals at the midpoint of the century represents one of the colorful and significant contributions to the history of the state. There is a pleasing harmony to the contributions

made by the Indian tribes to the development of the state and, therefore, to the university and its various colleges, and the subsequent contributions made by the college of Public Health to Indian health and to the Indian Health Service. The recent installation of a new dean at the college, and the commitment of the provost to strengthen the college, a thriving alumni association, and the strong linkages between the college and the various health departments form the basis for a rich and unique century to come. J

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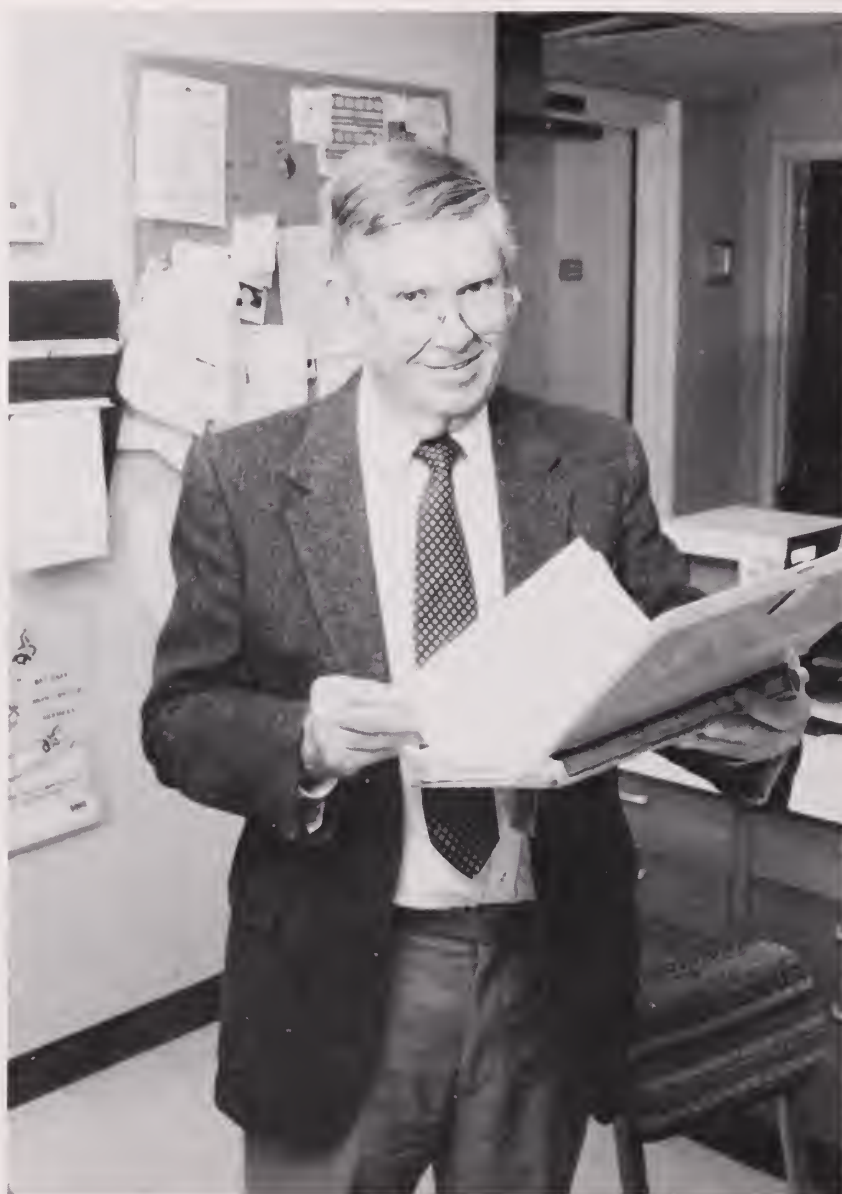
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## Acknowledgment

Mr Leonard Solomon graciously called my attention to the Crockett volume and provided me the use of his copy.

## The Author

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## **Leaders in Medicine: Claude H. Williams, MD**

Begun in 1981, the Leaders in Medicine series recognizes some of Oklahoma's most outstanding physicians and the contributions they have made to their communities and profession.

This is the twentieth article in the series.

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Story by Richard Green  
Photography by Victor Rivas

**A**t 9:30 one morning last October, the morning sunlight streamed across the plains of northwest Oklahoma, illuminating several big grain elevators a few miles ahead on Highway 51.

Heading west, it was an incredible sight; those glowing towers appeared like wayward skyscrapers emerging from a stand of trees that characteristically dot the landscape in towns named Hennessey, Canton, Fairview, and this one, Okeene.

Forty years before, two young interns saw essentially the same panorama—only from the west and in the afternoon—as they were driving back to Oklahoma City. They were so impressed by the sight that they decided to stop.

They had been in Buffalo—up near the Panhandle—being courted by the people thereabouts who said they badly needed doctors. The young men had been treated well and were favorably impressed, but it was a big decision . . . and just look at those grain elevators up ahead. What town is this anyway?

The man pumping their gasoline told them this was Okeene.

How many doctors you got?

One. You guys doctors?

Yeah, we're just finishing our training.

Well, then, you might like to see our new hospital.

The interns smiled.

Within minutes, the town seemed to mobilize—almost in a practiced way, like a weekly drill—to recruit these young men. Mayor Otis Goforth and Buford Thomas

showed them the new hospital. Goforth and Thomas were fitting escorts because they had done the most and raised the most, respectively, to get the new hospital built. They put their hearts and souls and money into the project, and their prestige on the line, to improve Okeene's health care and economic future.

And with the building nearing completion, two more doctors were needed pronto.

Driving home that evening, Kenneth Godfrey and Claude Williams talked enthusiastically about the town, which only a few hours before had been unknown to them. And before they saw Oklahoma City's lights, they had pretty much agreed to practice in Okeene.

They arrived in July 1951 and practiced together for a decade before Dr Godfrey left to study psychiatry at the Menninger Clinic. Claude Williams still lives in Okeene and though, at age 72, he can't see well enough to practice fulltime any longer, he's the first of Okeene's five doctors to get to their clinic every morning.

He's there, stethoscope hanging from his neck, chatting with his best friend and partner of 30 years, Dr Billy Dale Dotter who the night before had returned from an AMA conference in Washington, DC. As president of the Oklahoma State Medical Association, Dotter had been representing the entire state.

Near the center of the clinic, the room they are in serves as an enlarged thoroughfare connecting the nurses' station, the exam rooms,

the hospital and doctors' offices. The room, with an old couch, illuminated x-ray screens and a long counter stacked with charts, also serves as the "office" of Williams and Dotter. They gave the clinic's office space to their three younger partners.

As Dotter mentions the evening's dinner party (of all the doctors and their families at the Williams' house, welcoming their new preceptee), Williams's next patient arrives. She is an elderly woman who fears she is having either a nervous breakdown or heart problems or both. Williams takes her vital signs and assures her that her symptoms are caused by a normal grieving reaction. Only the week before, the woman's adult daughter had died suddenly and unexpectedly. He spends several minutes gently reassuring his long-time patient and friend.

**L**ater, her chart is returned to a common filing cabinet. Usually she is seen by Dr Williams; but notations made by some of the other partners appear in her chart. When she was hospitalized some time back, all of the doctors checked on her.

They say this system is the key to the high degree of both patient and doctor satisfaction in Okeene. Buford Thomas says Okeene has the best primary health care in the state. "Where else do you get five good doctors for the price of one?"

While other small rural towns are fortunate to have two physi-



## When Williams was asked how he and Dotter have settled disputes and problems, he answered: "I don't know. We haven't had any."

cians to keep open the community's hospital, Okeene, population 1,500, has five physicians and a hospital with a new \$500,000 obstetrical unit.

But such success isn't based on a system nearly as much as on the individuals who run it. And it started with Claude Williams 40 years ago. He and Kenneth Godfrey established the model, and he and Billy Dotter have sustained and possibly even perfected it. For when Williams was asked how he and Dotter have settled disputes and problems, he answered: "I don't know. We haven't had any."

During the last two decades, Dr Williams has had to fight to protect their achievements in Okeene, against "government medicine." Twice he made trips to Washington, DC, to tell government leaders that federal rules and regulations were strangling rural medicine. For three months in 1975, he and Dr Dotter stopped admitting Medicare and Medicaid patients to Okeene's hospital. Then, he helped formulate a plan which broke a deadlock with the government over in-patient admission guidelines.

And yet, he feels the victories (outside of Okeene) have been small and transitory as federal mandates continue to infringe upon the specialness of the doctor-patient relationship which attracted him to medicine in the first place. "If you have to do tests to cover your backside or perjure yourself to hospitalize your patient, then . . . since you asked, if I were just coming out of college, knowing what

I do, I'd go into some other field."

Not a happy assessment. And yet, no one coming out of medical school today has the benefit of his experiences. That is a mixed blessing, for reviewing his life may show how he, as a physician, has become an anachronism. Or it may be the profile of a once and future role model for the medical profession.

\* \* \*

**C**laude Harold Williams Jr. was born on March 5, 1919. That he was born in Oilton, between Stillwater and Sand Springs, is of little or no significance because until he was in high school, his family moved at least once a year.

As a roughneck, his father,

Claude Sr., followed the oil boom around Oklahoma. "He didn't like people telling him what to do," Claude says. "He always tried to work the 'morning tower,' from 11 PM to 7 AM, because the bosses weren't around."

Claude's mother, Ruby, held the family together through its migrations and economic ups and downs. "It was feast or famine," Claude says. "When Dad worked, we lived pretty well, and when he didn't have work, my mother saw us through with money she saved in a sock."

Being unsettled was the norm for the family, which also included Claude's younger brother, Gerald. A baby brother died when Claude was 6.

When he wasn't attending el-



Claude Williams and partner Billy Dotter have shared this office in Okeene for 30 years.

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**He met a football teammate's sister,  
Jimmie Wilkinson,  
and they were mutually smitten.**

ementary school, Claude hung out in pool halls because that's where oil field workers were recruited. "In junior high, I shot dice with pipeline men and drank a beer or two with my dad every so often while we were waiting for work."

**T**hey migrated from one rent house to another and once, for a few weeks in Stroud, lived in a tent. Maybe that's why Ruby put her foot down when the family moved to the Capitol Hill area of Oklahoma City. She told Claude Sr. that their elder son needed to stay put in high school.

Claude Sr. and Ruby expected their sons to graduate from high school and continue working. College was unrealistic, perhaps unthinkable until one day when Claude was visited by Jim Lookabaugh, his former football coach at Capitol Hill high. Claude had just graduated and was fortunate in 1938 to be making \$10 a day working on oil rigs around the state Capitol. "Coach Lookabaugh said he'd get me a football scholarship to Oklahoma A&M (where he would later coach) and if I was interested (as I damn sure oughta be), he'd take me to Stillwater next Tuesday and get me squared away," Williams recalls.

Claude, who had divided his time between the first- and second-stringers on the high school team, only lasted one day at A&M. He attended practice and, after going completely unnoticed, went back to the dorm, packed up, and



**Williams played football at Southwestern State in Weatherford.**

hitchhiked home. The next week, Lookabaugh found him again at the pool hall.

"I told coach, 'I'm making good money roughnecking.' He said it didn't matter, that I needed an education. And he offered to get me the same deal at Southwestern in Weatherford. After a bit, I agreed to go with him the next week. Then he said if he caught me in that pool hall again, he'd kick my ass. I believed him, too."

With that extra motivation, Claude remained and loved his college years. He was on the football and wrestling teams, did odd jobs for 25 cents an hour and fell under the influence of a Professor Hamberger of the industrial arts

department. For the first time, Claude had some direction in his life. Furthermore, he met a football teammate's sister, Jimmie Wilkinson, and they were mutually smitten. She invited him out for Sadie Hawkins Day but he'd just lost a front tooth in a football pileup and, feeling self-conscious, declined the invitation.

A week or so later, fortified with a new tooth and some recent winnings from a poker game, Claude invited Jimmie out and they went to see *Gone with the Wind*.

Claude also supplemented his income via the Army Reserves. But in 1940, Congress passed a law obligating all eligible young men to a year of active duty in the military. He enlisted in September 1940 as Hitler's Panzers were blitzkrieging across Poland, igniting World War II.

\* \* \*

**C**laude's "year" in the service turned out to be more than five. He rose from private to gun sergeant in the 45th Division's field artillery. On the way to apply his artillery expertise in the Philippines in December 1941, his ship was suddenly diverted to the Panama Canal Zone.

His unit spent several months building roads in the jungles and patrolling for an enemy that never materialized. The unit did, however, round up Orientals for detention as possible subversives—which was the low point of Claude's military service.



**After the medical camp was established,  
he observed the doctors at work,  
and this was an epiphany.**

He was accepted to Officer's Candidate School at Ft. Sill. There, he was reunited on weekends with his wife, Jimmie; they had married in June 1941. As an enlisted man, he had excelled in gunnery, but now as the US scrambled to catch up technologically with the Germans in artillery, Lt Williams was learning, then teaching, about increasingly sophisticated weaponry. "With a tank destroyer, you could shoot it like a rifle at a tank 2,000 yards away and like the name said, destroy it," Williams says.

In 1944, he joined a tank destroyer group with a top priority clearance of getting to the European battlefields to help put an end to the Third Reich. After Hitler's last offensive failed at the Battle of the Bulge in December 1944, Capt Williams served as a fire direction officer in a counteroffensive from Holland into Germany. "We were part of 275 battalions of heavy artillery firing almost constantly to soften up the retreating Germans, Williams says.

This artillery had a range of up to 15 miles and accuracy depended upon intelligence reports, weather conditions, mathematical equations, and luck. But once reports indicated they had zeroed in, "we'd open up with everything we had to destroy the target," Williams says. "It was a very challenging, exhilarating job."

As the Allies liberated the German concentration and labor camps, Capt Williams helped secure medical care for a portion of them by arranging for the coordi-

nation of equipment, supplies, medicines, doctors, and nurses. At age 26, it was virtually his first contact with physicians. ("My mother was about the only doctor we knew," he says.) After the medical camp was established, he observed the doctors at work, and this was an epiphany. He was so impressed by their manner, intelligence, skills and the way they relieved physical suffering under such difficult circumstances, that he decided to apply to medical school.

After he was discharged, he was accepted by OU, but apparently hadn't noticed the return address. Claude and Jimmie considered themselves fortunate to have found a house near campus, but when

they were ready to make a down payment, learned it was the wrong campus. The medical school wasn't in Norman.

Claude also wasn't prepared for the extraordinary amount of memorization and regurgitation required in the basic science years. And though he sometimes wondered if he would make it, as a member of the first post-war medical school class he was never intimidated. He and his classmates who were combat veterans weren't cowed by harsh or unfair discipline.

Aside from learning the basic sciences, Claude was also being tutored in the importance of accepting Christ. Jimmie was his instructor and she was persistent. "He was worth the effort," she says.



**In Germany during World War II, Williams (r) served as an artillery fire direction officer.**



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**"If you love your patients unconditionally,  
you always want what is best for them,"  
Williams says.**

His conversion, he insists, has made him a better doctor. "If you love your patients unconditionally, you always want what is best for them," Williams says. "Accepting Christ has given me added motivation to make moral decisions."

During the clinical years, Williams felt he interacted especially well with patients. The doctor-patient relationship was an art form he loved practicing and believed he would enjoy spending a lifetime refining. He had God-given ability and great role models, such as the great pediatricians Garrison, Bielstein, and Nicholson (the towers of Children's Hospital of Oklahoma are named for them). And though he liked treating children, specializing was out of the question. The GI Bill covered only medical school and by 1950, when he graduated, the Williams had two sons, James and Craig, and his internship at Wesley Hospital paid him only \$60 a month.

\* \* \*



Williams talks to a patient, Mrs Myrtle Haiglen. He says the doctor-patient relationship is an art form he loves practicing.

**T**he town was settled on a chilly, misty April the nineteenth, in 1892. At noon, the gun fired and the race was on. One of the founding fathers, Elmer Bardrick, created the name Okeene from the *O* in *Oklahoma*, *kee* from *Cherokee* and *ne* from *Cheyenne*. He and his brother erected a building, dug a well and put up hitching posts. A few years later, two doctors arrived.

It is believed that the town has had medical coverage ever since,

but by 1951, Okeene was down to one doctor. Two years before, however, signs indicated that some of the countryside might be floating on a sea of oil. Speculators and brokers appeared, carrying suitcases full of cash, buying mineral rights from all the "yokels." But when the well on Buford Thomas's land blew in, it was salt water. The investors disappeared, but their cash was dispersed around northern Blaine county—and that helped to build the new hospital.

So when Claude Williams and Kenneth Godfrey and their families arrived in 1951, their timing was perfect. Okeene's lone doctor was happy to welcome them but not inclined to refer any patients. And despite the spirited recruiting job done by the town's leaders, the residents were much more standoffish. "We spent the first few months doing a lot of reading and staring at the front door," Claude says.

They also voluntarily taught

**Williams said to Dotter:  
"You stop the bleeding and I'll keep 'em breathing."  
The deal was sealed with a handshake.**

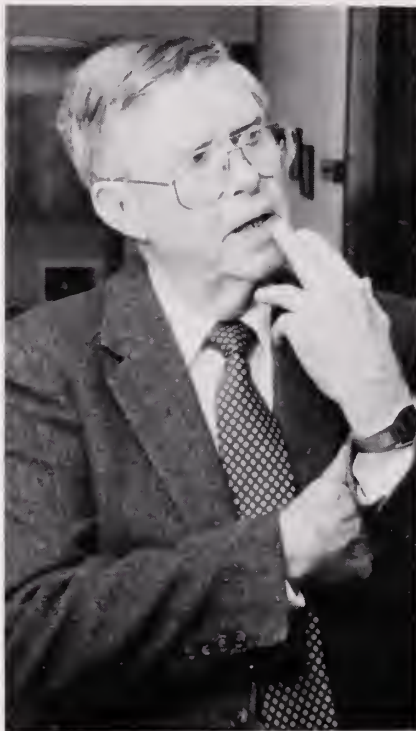
one class each at the high school due to a shortage of math and science teachers. And to get busier, they set up a clinic in doctorless Canton, 18 miles west, and took turns seeing patients there.

Then, Okeene's other doctor died from a heart attack and Williams and Godfrey were on their own. Their partnership was based on good judgment, common sense, trust, and flexibility. They agreed that a patient should be seen by whomever was better able to handle the care (most surgery was done by Godfrey) or whomever was available. The third criteria was patient choice, but all patient records were shared.

Within a couple of years, they were too busy to even look at their front door. In addition to their patients, they also performed most physicals and emergency care on employees of the county's two largest companies: the Okeene Mill and US Gypsum, located to the southwest in the Gyp Hills. (A relatively large share of Williams's emergency care in Okeene—the Rattlesnake Capital of the World—involved, yes, snake bites; Williams estimates he has treated about 150 cases.)

More patients meant less time with the family, which by 1955 had been completed with the birth of a daughter, Jan. As a way of compensating, Williams bought a plot of land and a cabin in Colorado, which served as the family's annual vacation retreat.

Small-town doctors often become community leaders, but



**Williams reflects on his 40 years of achievement in Okeene.**

Williams's commitment went beyond serving on a few civic committees. As a founder and president of the private, non-profit Okeene Development Corporation, he and six other civic leaders put up capital to buy land and furnish utilities for a housing development. The lots were sold at cost and in due course the financiers' money was returned to them. The north development filled up so fast that the ODC started a second development to the east. Among the many buyers were farmers and ranchers who wanted the advantages of living in town. A third housing development

in west Okeene was completed in the 1970s.

Williams joined OU's preceptorship program in 1955, believing that his involvement would be advantageous to the students and to him. "We can show 'em the art of medicine and they can help keep us current," he said. But he also knew that a few of those preceptees might someday become his partners.

One of them, Merle Carter, told fellow intern Billy Dale Dotter about what a wonderful experience he had had in Okeene with Williams and Godfrey, who was moving to Menninger's. "You've got to meet this guy," Carter said of Williams. A visit was arranged and it was mutually "love at first sight." Though Dotter was inexperienced at medicine, he, at 35, wasn't exactly a callow youth. He had been a Marine sergeant, had operated the Dotter Cafe in Alva, was married and had five children. "I think I can read people pretty well," Dotter says. "And my impression was that Claude was absolutely open; there wasn't a pretentious bone in his body. I had a better offer from the Newmans in Shattuck: they offered to support me through a surgery residency. But you know I got to thinking, you spend more time with your partner than with your wife. So you need something solid and Claude was that, solid."

After Dotter completed a year of surgery training (during which Merle Carter filled in), they agreed to practice just as Williams and Godfrey had, including splitting the



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**Of utilization reviewers in 1975, Williams says,  
“Their idea of a rural hospital probably was  
300 beds in a suburb of Chicago.”**

money down the middle. As Claude said: “You stop the bleeding and I’ll keep ‘em breathing.” The deal was sealed with a handshake. But three years later, Medicare was enacted and the era of government medicine had begun.

\* \* \*

**T**hough Claude Williams had always excelled professionally, he never had the charisma or flamboyance or desire to stand out. When he led, he did so by example. He didn’t just talk about Okeene’s economic development; he put up his money. And he wasn’t admired and beloved by dozens of OU preceptees because he was flashy. Through this unassuming, plain-spoken man, they saw the magic of the art of medicine. And though not every student might have been willing or able to emulate him or achieve the high level of trust, gratitude and love from their patients, they would remember him as a wonderful physician role model.

By 1975, his integrity and judgment as a physician were being questioned (if indirectly) by the federal government. In accordance with the regulations written for Public Law 92-603, all Medicare and Medicaid admissions had to be reviewed within two days by someone having no financial or professional interest in the hospital or with the patient. Without signed approval, no reimbursement would be made.

As all 26 doctors practicing in

the 10 hospitals of northwestern Oklahoma could clearly see, compliance with the law was impossible and the loss of federal reimbursement would force the hospitals to close.

Since the 26 doctors were 20 less than their caseload demanded, no extra doctors were available to be itinerant utilization reviewers. HEW (now HHS) said non-physicians would do and offered a 580-page manual on admission and treatment guidelines. There were two theories on how these monstrous regs could have been promulgated. Williams wanted to believe the first but had become cynical enough not to discount the second. The first was that well-intentioned bureaucrats, wanting to curb abuses, had written the regs thinking only of urban hospitals. “Their idea of a rural hospital probably was 300 beds in a suburb of Chicago,” Williams said. The

second theory was more sinister: in the name of cost containment, it was decided to eliminate many rural hospitals, but pin the blame on greedy, dishonest doctors.

Believing that only an aroused public could save Oklahoma’s (and the nation’s) rural hospitals, Williams organized and presided over a meeting in Fairview on January 28, 1975, to discuss the consequences of the law. He invited the doctors and hospital officials of northwest Oklahoma, newspaper reporters, and representatives of Oklahoma’s Congressional delegation.

Afterwards, the public outcry exceeded even Williams’s expectations. Gov David Boren wrote to House Speaker Carl Albert for Congressional help and threatened a lawsuit. Sen Dewey Bartlett arranged a meeting in Washington with HEW officials. Bartlett and Congressman Glenn English also



Claude and Jimmie Williams often join Alice and Billy Dotter for dinner at a local pizza parlor.



**After meeting with HEW Secretary Caspar Weinberger,  
Williams thought the secretary was  
"the most uninformed man in Washington."**

introduced identical bills to exempt rural hospitals from the law.

The law was to become effective February 1. An HEW regional official in Dallas told Williams and Dotter to do the best they could and everything would be all right. But when the Okeene doctors asked for this assurance in writing, he refused. So rather than be in violation of federal law, the Okeene doctors stopped admitting Medicare and Medicaid patients to the hospital.

Sen Bartlett invited Dr Williams and Dr Jack Fetzer of Woodward to Washington to make the case for rural medicine. After meeting for an hour and a half with HEW secretary Caspar Weinberger, Williams thought the secretary was "the most misinformed man in Washington." The doctors asked that small hospitals be exempted and incidentally, pointed out that Congress's top health priority of the year before had been calling for adequate primary care services for medically underserved populations. The government can't have it both ways, Williams said.

Implementation was delayed for two months, during which Williams developed a utilization review plan that he hoped might substitute for the federal regulations. His model along with input from other Oklahoma physicians and the state medical association became the Oklahoma Utilization Review System (OURS), which was sanctioned as a demonstration project by HEW.

OURS was composed of six teams of physicians meeting



**Jimmie and Claude Williams enjoy quiet times together in the sun room of their home.**

quarterly to review questionable federal insurance claims. The OURS budget was \$180,000. In return, a study showed that OURS had saved taxpayers \$13.5 million from February 1 to July 1 compared with the same period in 1976, according to then OSMA president C.S. Lewis of Tulsa. He noted that under OURS, 7,000 fewer claims had been filed and 25,000 fewer hospital days had been used.

Four years later, in 1979, Williams was again in Washington at the invitation of now Sen David Boren to testify before the Senate Finance Committee. Later, part of his testimony was featured in the lead editorial of *American Medical News*. It was titled "Meet Dr Williams."

He said elaborate federal regulations for health-care institutions are working an undue hardship on rural physicians and hospitals. One incredible example he cited was that the Okeene hospital is "required to staff the same number of committees, maintain the same kind of records, and generate the same number of reports to HEW as a 1,000-bed hospital with hundreds of staff doctors."

With such red tape, Williams told the senators that the preceptor program, which had been created to attract doctors to rural Oklahoma, was now backfiring. "They come, they see, and say, 'No way.'"

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## The signs abound that Williams has made an enormous difference in his community as a physician and leader.

\* \* \*

Now, twelve years later, Williams says that government restrictions on the practice of medicine are as strong and pervasive as ever, maybe more so. But he also believes that the OURS program, which the government nixed more than a decade ago, still is having a residual positive effect in that the state's PRO, the Oklahoma Foundation for Peer Review, maintains some physician control.

Moreover, the signs abound that he has made an enormous difference in his community as a physician and leader. Williams Avenue is part of one of the new housing developments. The Church of Christ is open today, his friend Jack Middleton says, because "Doc resisted the idea of closing it after the preacher left and the congre-

gation dipped to about 10. Doc helped recruit a new preacher and contributed substantially to keeping him in Okeene so that membership could increase.

More importantly, Claude recruited Billy Dotter, which he says was the highlight of his career, and their 30-year partnership has been the basis for attracting patients, more partners, and the hospital's success. It is Blaine county's largest employer and operates in the black. When the city's hospital board decided to expand and modernize the OB unit, initial donations from citizens raised more than half of the \$500,000 cost. This investment was based on the fact that other small hospitals are downscaling or quitting OB and that Okeene's doctors and hospital already draw patients of all kinds from other areas.

So it was fitting in 1989, when the OU College of Medicine Alumni Association departed from its usual practice of honoring one private practice physician annually and named both Williams and Billy "Private Practice Physicians of the Year."

Some might have thought that the association was symbolically honoring the passing of an era. But it is a better bet that the two old friends were being honored for their accomplishments. They have maintained their integrity, ethics, and a high level of patient care during the evolution of a system that seems ever more mercenary.

□

*Richard Green is a freelance writer in Oklahoma City. He has been writing Leaders in Medicine biographies for a number of years.*

*Victor Rivas is a freelance photographer living in Norman. This is his second JOURNAL assignment.*

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*Delegates debate resolution*

## AMA House calls for dismantling of national physician data bank

At the December meeting of the AMA in Las Vegas, a resolution which asks that "The AMA seek to abolish the National Practitioner Data Bank" was adopted. The resolution was adopted by the House of Delegates with a large majority vote and will be a strong message to Congress that the physicians of the United States plan to use all efforts to close the data bank as it exists today.

The AMA Hospital Medical Staff Section defeated a similar resolution a few days earlier by a narrow margin. That resolution asked the "AMA to call for the timely and systematic dismantling of the data bank."

It is of interest to review past AMA actions and policy regarding a data bank for adverse information and peer review involving physicians. In June, 1986, just before Congress passed the Health Care Quality Improvement Act of 1986 (PL 99-660) which mandated "The National Data Bank for Adverse Information on Physicians and Health Care Practitioners," the AMA House of Delegates adopted Report QQ of the Board of Trustees.

Report QQ established policy addressing AMA initiatives on quality of care and professional self-regulation as summarized below:

1. The AMA will call on all physicians to renew their commitment to report professional misconduct and incompetence and to participate in peer review.

2. The AMA will expand and improve its Physician Masterfile (Data Bank) so that any hospital medical staff or other appropriate body seeking to verify credentials, including disciplinary actions taken by state medical boards, other hospitals, and the Department of Health and Human Services may receive verification within one week.

The AMA National Physician Credentials Verification Service, developed by the AMA in 1988 will serve to verify (with physician input evaluation) the adverse actions or information.

AMA policy at this time is in support of a data bank for adverse information on physicians *only*. The

NPDB as mandated in PL 99-660 and operated by UNISYS is not acceptable.

If a dismantling of the NPDB should occur, hopefully a new data bank for adverse information on physicians *only* could be incorporated into the AMA masterfile and into the data bank of the Federation of State Medical Boards of the United States with funding by a contract with the Section of Health and Human Services.

Data bank operational statistics (September 1990 to November 1991) are listed below:

Queries	Number	% of Total Queries
Self queries	4,239	.5%
Single name queries	189,309	20.5%
Multiname queries	731,455	79.1%
Total	925,003	100%

Reports to Data Bank	Number	% of Total
Adverse actions	3,357	15.1%
Licensure	2,388	
Clinical Privileges	943	
Prof Soc Membership	26	
Medical Malpractice		
Payment	18,808	84.9%
Total	22,162	100%

Disputes	Number Filed	% of Total	Number for Review
Malpractice payments	1591	74.8%	93
Adverse actions	537	25.2%	91
Total	2128	100%	184

—William O. Coleman, MD  
Chairman, OSMA-HMSS

### *Presidential Citation presented*

## **OSMA Board of Trustees holds its fall meeting in Oklahoma City**

The Board of Trustees of the Oklahoma State Medical Association met Sunday, November 24, at OSMA headquarters in Oklahoma City.

Highlight of the meeting was the award of a Presidential Citation to Jasper L. Wheeler, MD, Boise City. A general practitioner, Dr Wheeler accurately diagnosed a young patient's rare case of bubonic plague. His astute assessment brought national attention and honor to himself and his profession.

In other action, the board:

- Approved a motion to endorse a Lloyd's of London program for HIV protection for physicians;
- Approved a membership credit card plan to be administered by Stillwater National Bank;
- Endorsed a licensing contract between the OSMA Member Services Corporation and C.L. Frates and Company that allows the corporation to receive income from C.L. Frates for the use of the OSMA seal, name, and corresponding bill in the marketing

of various insurance products endorsed by the OSMA;

- Approved a motion to reorganize the Council on Medical Education;
- Tabled three HIV-related resolutions from the Council on Public and Mental Health, pending decisions by the AMA House of Delegates at its December interim meeting;
- Endorsed a recommendation from the Rural Caucus for the formation of a Council on Rural Health, with the recommendation to be forwarded to the OSMA House of Delegates for approval and for the necessary revision in the OSMA Bylaws;
- Approved an expenditure of up to \$15,000 for OSMA's half of a joint OSMA-PLICO office in Tulsa, with the understanding that a future site with Tulsa County Medical Society be considered;
- Appointed Associate Editor M. DeWayne Andrews, MD, Oklahoma City, to serve out the unexpired term of Editor Harris D. Riley, Jr., MD, who has stepped down, and appointed Ollie W. Dehart, MD, Vinita, as an associate editor;
- Granted Life Membership status to Gerald L. Beasley, Jr., MD, Duncan, and Norman D. Owrey, MD, Carrollton, Tex.



Present at the meeting were OSMA Secretary-Treasurer Elaine N. Davis, MD, (above) giving her report, and trustees Gary L. Paddack, MD, Ada (top right), and Dennis K. McIntyre, MD, Enid.



(Far right) Jasper L. Wheeler, MD, Boise City, proudly displays his Presidential Citation as his wife, Reba, and Trustee Ed L. Calhoon, MD, Beaver, look on.



Oklahoma State Department of Health

## Traumatic brain injuries kill or disable 4000 a year in Oklahoma



Traumatic brain injury (TBI) is the single leading cause of premature death of Americans under the age of 44.

More than 700,000 TBIs occur annually and more than 70,000 of those will result in permanent intellectual, emotional, and physical disabilities; 2,000 will exist in a vegetative state; and approximately 75,000 to 100,000 will die.

In Oklahoma, an estimated 4,000 persons suffer a traumatic brain injury each year; almost one-quarter will die. Among survivors, nearly one-third suffer a severe brain injury and about half this number are discharged from the hospital with neurologic deficits. Adolescents 15 to 19 years old have the highest risk of injury; one of every 500 Oklahoma teenagers suffers a TBI each year.

These injuries are not only debilitating, but very costly. In 1989 the cost of TBIs in Oklahoma, includ-

ing hospitalization, physician/surgeon fees, and emergency transport, exceeded \$30 million.

In Oklahoma, TBIs are most commonly caused by motor vehicle crashes, including bicycle, motorcycle, and pedestrian incidents (46%); falls (25%); gunshot wounds (10%); or other assaults (9%).

In an effort to prevent TBIs, the Oklahoma State Legislature established the "Advisory Council on Traumatic Spinal Cord and Traumatic Brain Injury," in the spring of 1991. As part of this effort, the legislature mandated that effective January 1, 1992, all public and private health, social agency, and attending physicians report all hospitalized and fatal traumatic spinal cord injuries or traumatic brain injuries to the Oklahoma State Department of Health (OSDH) within seven days of identification. Fatal and hospitalized submersions (drownings and near drownings) and burns also are reportable.

(continued)

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## Brain injuries *(continued)*

A summary of the compiled TBI statistics from the OSDH central registry will be compiled annually and sent to the advisory council. The council will then use this report to assist the OSDH in planning special TBI prevention programs, evaluating needs and accessibility to a rehabilitation system for persons who have suffered a TBI, and providing preventive education material about TBIs to public and private entities.

Physicians who need more information concerning the reporting of TBIs, or spinal cord injuries, burns, or drownings, can contact the OSDH Injury Epidemiology Division at 405/271-3430. □



Sara R. DePersio, MD, chair of the OSMA Board of Trustees, greets Louis Sullivan, MD, secretary of the HHS, during his November 7 appearance in Oklahoma City.

## BOOK SHOP

### **Psychopharmacology for Everyday Practice.**

By Thomas A. Bann and Mark H. Hollander. New York, etc: S. Karger, 1987. Pp 194, price \$22.50.

The number of psychopharmacologic agents used in medical practice has expanded greatly in recent years. There is considerable confusion about the indications, therapeutic efficacy, untoward reactions, and other use of these agents. This book organizes and brings order to this burgeoning field. Written by two leaders nationally recognized in this field, it presents a comprehensive and useful analysis of this field of therapeutics.

It is prepared in a question-answer format which is rather unique. As pointed out in the introduction, it begins with the questions posed by residents in psychiatry as they worked with patients in an outpatient clinic. Questions which are presented are answered briefly and to the point. The monograph is organized into seven major categories including five on specific groups of agents including lithium, neuroleptics, tricyclic antidepressants, and others. There are also chapters entitled "Pregnancy and Nursing" and "Anti-Parkinson Medication." The monograph provides 283 concise answers dealing with these subjects. Most of the answers provide one or two well selected references for further reading. There is also a useful glossary of drugs giving both the generic and proprietary name of agents.

This is certainly a practical and authoritative monograph. It is clear that it will be useful to most

practitioners dealing with adult patients. It is hoped that in a future edition the authors also will include consideration of therapy of children.

—Harris D. Riley, Jr., MD  
Nashville, Tenn

### **The Transforming Principle: Discovering That Genes Are Made of DNA.**

By Maclyn McCarty. New York and London: W.W. Norton & Co., 1988, pp 252, illus, \$14.95.

In May 1978 the JOURNAL carried a review of the book *The Professor, The Institute and DNA* by Rene J. Dubos. It told the story of how Professor Oswald T. Avery of the Rockefeller Institute and his two associates discovered that genes are made of deoxyribonucleic acid (DNA). The present book, *The Transforming Principle*, tells the important story of one of the participants in this epoch-making discovery, Dr Maclyn McCarty. This book is the first in the Commonwealth Fund Book Program Series. McCarty, an outstanding investigator and physician, details in an interesting but modest fashion the monumental contribution Oswald T. Avery, Colin M. MacLeod (at one time a resident of Oklahoma City), and he made in demonstrating that genes are made of DNA and the genetic role of this substance. This discovery is quite possibly the most important advance in biology in modern times. It opened the way to the biological revolution which continues to transform our knowledge of nature and of disease.

## Book Shop (continued)

The first written report of this revolutionary finding, other than mention of it in an internal report of the Rockefeller Foundation (prepared slightly earlier) was in a letter written in May 1943 by Professor Oswald T. Avery to his brother Dr Roy C. Avery, professor of bacteriology at Vanderbilt University. Parts of this historic letter are reproduced in the book. The definitive report on the discovery was published in the *Journal of Experimental Medicine* in 1944.

Along the way in his narration of the story of DNA, McCarty tells us something about himself. He lived in several different locations, primarily in the west and midwest, graduated from the Johns Hopkins Medical School, and was a pediatric house officer at the Harriet Lane Home of the Johns Hopkins Hospital. He was then awarded a fellowship at the Rockefeller Institute and remained on the faculty to work with Professor O.T. Avery.

This is an interesting small book by a distinguished researcher dealing with one of the great scientific discoveries.

—Harris D. Riley, Jr., MD  
Nashville, Tenn

**Vaccines.** Stanley A. Plotkin and Edward A. Mortimer, Jr., Philadelphia: W.B. Saunders, 1988, pp 633, illus, \$99.00.

A little over 100 years ago the first vaccines were developed in laboratories. During the intervening time the success of vaccination has been little short of phenomenal. Of the major scourges of mankind, malaria and helminthic diseases remain without useful vaccines, although they have now been joined by human immunodeficiency virus infection. Of course, there are many endemic diseases, chiefly respiratory, for which vaccines are needed, and there is great activity in many laboratories seeking to develop immunologic prophylaxis against them. The use of vaccines has been accompanied by an explosion of knowledge relating to methods of inducing immunity and in the development of vaccines.

This book provides a comprehensive analysis of the field of immunization and vaccines. It is a 633-page comprehensive text. Drs Plotkin and Mortimer along with 42 contributors have done an excellent job in surveying in depth this important field.

The book begins with a brief history of vaccination. This is followed by separate chapters on every presently known type of vaccine. The more commonly used vaccines are discussed first — smallpox, diph-

## IN MEMORIAM

### 1991

Milton Louis Berg, MD	January 7
Clifford Wesley Moore, MD	January 7
Frank Eugene Darrow, MD	January 8
Forrest William Olson, MD	January 30
Charles Watson Robinson, Jr., MD	February 22
Clarence Pierce Taylor, Jr., MD	March 3
Linus A. Munding, MD	March 14
Robert Love Loftin, MD	March 15
William Orville Davis, MD	March 23
Malcom E. Phelps, MD	March 26
Henry Edward Barnes, MD	April 2
Alfred Burke Hinkle, MD	April 2
Hassell Eugene Groves, MD	April 3
Joe Marion Parker, MD	April 3
Henry Clinton Smith, MD	April 4
George Louis Kaiser, MD	April 10
Robert Phillip Messinger, MD	April 10
John Norman Penrod, MD	April 19
John Florence, MD	April 20
Clifford Alton Brown, MD	April 29
James Goree Moore, MD	April 29
Mark Duane Hopping, MD	May 1
William Alfred Cunningham, MD	May 13
Gilbert Wayne Tracy, MD	May 13
George Clifford Moore, MD	May 24
Daisy Gertrude Cotten, MD	May 26
Edward Woodrow Ellis, MD	May 28
Ronald I. Cramer, MD	June 16
Edward Tiffin Cook, Jr., MD	June 18
Arvin Craig Roberson, MD	July 15
John Berry Gilbert, MD	August 6
Frank Leo Bradley, MD	August 31
Rugie Reginald Coates, MD	September 15
James Byron Snow, MD	September 28
Howard Angus, MD	October 9
Jack Owen Alexander, MD	October 21
Roy Oliver Kelly, Jr., MD	October 22
Lowell Francis Thornton, MD	October 22
Lillian Marie Hoke, MD	October 25
Irwin Hubert Brown, MD	October 27
Francis Ray First, Jr., MD	October 28
Robert W. Kahn, MD	October 30
Charles Hugh Wilson, MD	October 30
George Kellogg Stephens, MD	November 4
Samuel Richard Fryer, MD	November 30



theria, tetanus, pertussis, poliovaccines, measles, mumps, rubella. This is followed by discussion of such vaccines as those used to prevent meningococcal, pneumococcal, *Hemophilus influenzae*, typhoidal, and other infections. In all, 27 chapters discuss specific vaccines or infections for which vaccines might be available.

The final chapters are important. There is an excellent discussion about new technologies for making vaccines, one on the regulation and testing of vaccines, the other on public health considerations, and an interesting chapter entitled "American Law and Preventive Vaccination Programs."

Although there is variation in style and quality as expected in a multiauthored book, the quality is more uniform than is usual. Each chapter is enhanced by tables and figures that expand or illustrate information contained in the text.

The chapters at the end of the book are particularly interesting because they deal with several vaccines (at the time of writing) of the future such as those against cytomegalovirus, varicella and hepatitis, and the acquired human immunodeficiency virus infections.

The authors state in the preface that the text is a "reference source for all who are interested in vaccines." This is indeed true; it is a very valuable reference for the physician who deals with vaccines.

—Harris D. Riley, Jr., MD  
Nashville, Tenn

## DEATHS

### Francis Ray First, Jr., MD 1918 - 1991

Retired Checotah general practitioner Francis R. First, Jr., MD, died October 28, 1991. Born in Alexandria, La, Dr First was a 1943 graduate of the University of Tennessee Medical School. During World War II he served on active duty with the US Navy, attaining the rank of lieutenant. Dr First was an active member of the Flying Physicians Association and served as the Oklahoma chapter's first president in 1958. He also served on the State Board of Medical Examiners and was president of the Oklahoma Academy of Family Physicians. Dr First was a Life Member of the OSMA.

### Samuel Richard Fryer, MD 1910 - 1991

Samuel R. Fryer, MD, a retired general surgeon and Life Member of the OSMA, died November 30, 1991. The Oklahoma City physician was a 1933 graduate of the University of Oklahoma School of Medicine. He worked for more than forty years as OG&E's medical director, specializing in electrical burn treatment. Dr Fryer served on active duty with the US Air Corps for 43 months during World War II, attaining the rank of major.

### Charles Watson Robinson, Jr., MD 1931 - 1991

Charles W. Robinson, Jr., an Oklahoma City cardiologist, died at his home on February 22, 1991. Dr Robinson was born in Oklahoma City and graduated from the University of Oklahoma School of Medicine in 1957. He served as a lieutenant commander in the US Navy from 1962 to 1964. Dr Robinson was chairman of the cardiology department at the Oklahoma City Clinic and president of Presbyterian Hospital's medical staff. He also served as secretary of the board for the Presbyterian Health Foundation and was a clinical professor of medicine at his alma mater. From 1974 to 1976 he was president of the Oklahoma Society of Internal Medicine.

### James Byron Snow, MD 1903 - 1991

OSMA Life Member James B. Snow, MD, retired Oklahoma City pediatrician, died September 28, 1991. Dr Snow earned his medical degree at the University of Texas Medical Branch, Galveston, in 1926. He served on active duty with the US Army during World War II, attaining the rank of lieutenant colonel. Dr Snow practiced in Oklahoma City for more than 40 years.

### George Kellogg Stephens, MD 1909 - 1991

Newport, Ark, native George K. Stephens, MD, Ada, died November 4, 1991. He earned his medical degree from the University of Arkansas in 1933. A pediatri-



## Deaths *(continued)*

cian, Dr Stephens practiced in Sherman, Tex, and Whitewright, Tex, before entering the US Army Air Corps in 1942. After his discharge in 1946, he established a private practice in Ada.

### Lowell Francis Thornton, MD 1922 - 1991

Former Lawton pathologist Lowell F. Thornton, MD, died October 22, 1991, in Shawnee. Dr Thornton was born in Iloilo City, Philippines, and was graduated from the University of Oklahoma School of Medicine in 1948. He completed his postgraduate training in Birmingham, Ala, and St. Louis, Mo, before moving to Lawton in 1956. From 1974 to 1976 he participated in a continuing education program in Oklahoma City, prior to moving to Shawnee. He retired in Shawnee in 1978. Dr Thornton served on active duty with the US Army during both World War II and the Korean conflict. J

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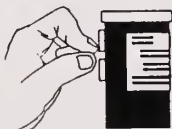
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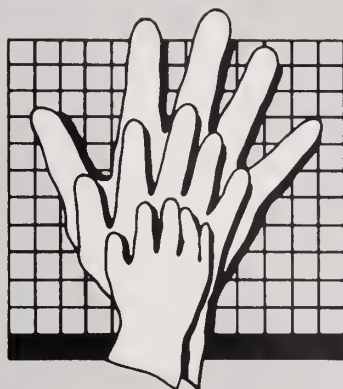
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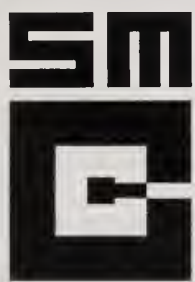
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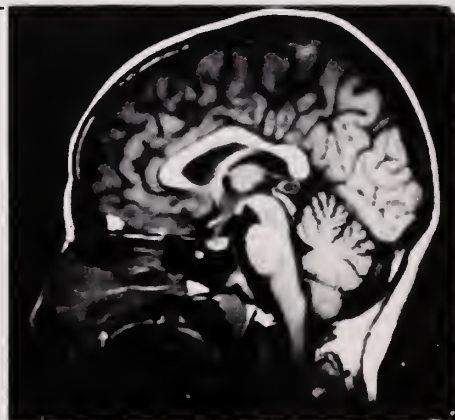


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### Style

All manuscripts should adhere to the style adopted by the American Medical Association as illustrated in *JAMA* and detailed in the AMA's *Manual of Style*. An abstract of 150 words or less should accompany each paper and should state (1) the exact question considered, (2) the key points of methodology and success of execution, (3) the key findings, and (4) the conclusion(s) directly supported by these findings. Footnotes, bibliographies, and legends for illustrations should be typewritten, double-spaced, on separate sheets. References are to be listed in the order of their appearance in the article.

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### Reprints

Authors will receive reprint order forms from the Transcript Press, 222 East Eufaula, Norman, Oklahoma 73069, prior to publication of their articles. Other requests for reprints must be made to the Transcript Press within 30 days after publication.

### News

Readers are encouraged to submit news items of interest to Oklahoma physicians. Where dates of meetings, etc., are important, please remember that each issue closes on the first day of the *preceding* month and reaches subscribers in the latter half of the month of publication.

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## Auxiliary to focus this year's efforts on preventive medicine

The Oklahoma State Medical Association Auxiliary (OSMAA) is promoting Preventive Medicine as their health emphasis for this year. The principal goal is the promotion of wellness through the improvement of our health behavior and lifestyles. There are four major areas of emphasis which include the following: (1) Healthy Lifestyles, which encompasses the areas of fitness, nutrition, screenings, smoking, and drug/alcohol awareness; (2) Prenatal/Postnatal Care; (3) Immunizations; and (4) Safety (car and bike safety, poison prevention, home safety, etc).

The plan is for county auxiliaries throughout the state to participate concurrently in health projects in

their own counties during the week of March 29-April 4 of 1992. Each county is encouraged to select and develop 2 to 3 projects which focus on the previously mentioned areas of concentration and are based on the needs within their own counties. These projects also can be developed to enhance already existing programs in their counties.

Preventive medicine can play a vital role in our health. Therefore, it is hoped that through education and encouragement, many Oklahomans can enjoy a healthier future.

—Debbie Glasgow  
OSMAA Health Projects Chair

■ **The Governor's Conference on Rural Health** will be held March 30 and 31 at the Oklahoma City Marriott. The conference is being planned and coordinated by the OU College of Public Health. Governor David Walters and Dean Bailus Walker (of the college) will co-chair the conference. The meeting will bring together leaders from all areas that affect rural health care in Oklahoma. Model rural health care programs will be presented and will address such issues as rural hospital viability, recruitment and retention of health professionals, economic development and health services, health promotion, and limited access. Participants will explore possible options and practical and feasible solutions to the problems of rural health in Oklahoma.

Results of the conference deliberations will form the basis of rural health care recommendations to the Governor, to the Oklahoma Legislature, and to the newly established State Office of Rural Health. For a registration form, contact Kay Holladay, MPH, Conference Coordinator, College of Public Health, PO Box 26901, Oklahoma City, OK 73190, (405) 271-2342.

■ **Edward J. Tomsovic, MD, Tulsa pediatrician,** led a discussion on "Athletic Injuries in Children" at the 85th Annual Scientific Assembly of the Southern Medical Association in Atlanta, November 16-19. The four-day assembly was attended by over 3,000 physicians.

■ **Physicians who have not yet ordered the *Federal Register*** containing the final version of the new Medicare regulations may wish to note the following: The stock number for the *Register* is 069-001-000-37-8; the phone number for orders is 202-512-2465.

■ **Volunteers for the Doctor of the Day program** at the Oklahoma State Capitol are still needed. Physicians wanting to participate should submit the blue application form contained in the November issue of the *OSMA News*, or contact Bobby Brown at the OSMA, 601 Northwest Expressway, Oklahoma City, OK 73118, (405) 843-9571 or 1-800-522-9452.

■ **Thomas R. Ahrend, MD, Ada,** recently received a three-year appointment as Cancer Liaison Physician for the Cancer Program at Ada's Valley View Regional Hospital. The Cancer Liaison Program is an integral part of the Commission on

Cancer of the American College of Surgeons. Dr Ahrend joins a network of over 2,000 volunteer Cancer Liaison Physicians who provide leadership and support to the Hospital Cancer Program and other Commission on Cancer activities. Dr Ahrend also provides local leadership for the annual national clinical goal of the Cancer Liaison Program — the utilization of tumor nodes metastases staging.

■ **John I. Fishburne, Jr., MD, chair of the University of Oklahoma Health Science Center's Department of Obstetrics and Gynecology,** has been appointed to fill the James A. Merrill Chair in Ob-Gyn. The newly created post is named for James Merrill, MD, first chairman of the department, who now serves as executive director of the American Board of Obstetrics and Gynecology.

■ **Some 34 primary care physicians from across the state** were registered for a child abuse examiners seminar conducted November 15 and 16 in Oklahoma City. Chief Child Abuse Examiner Robert W. Block, MD, Tulsa, and six other faculty members from the University of Oklahoma conducted the two-day course, designed to instruct physicians to recognize and thereby reduce incidents of child abuse.

■ **OSMA member physicians by now should** have received their copies of the new OSMA physician directory, issued last month. Each member physician is mailed one copy at no charge; additional copies may be ordered for \$25 each. The charge per directory for non-members is \$50 or, in bulk orders of ten or more, \$25 each. All orders must be prepaid and should be directed to the OSMA, 601 Northwest Expressway, Oklahoma City, OK 73118.

■ **The Continuing Medical Education Department** of the University of Oklahoma College of Medicine will present two seminars in February. The first, "Geriatrics Symposium," will be held February 22 at the Waterford Hotel in Oklahoma City. The second, "Critical Care Medicine," is scheduled for February 29 through March 5. To be held at the Holiday Inn West in Oklahoma City, the six-day course will offer in-depth discussions and workshops covering selected topics of current interest in the management of critically ill patients. For registration information on either program, contact Magdalen De Bault, Associate Director, CME, OU College of Medicine, PO Box 26901, 3SP511, Oklahoma City, OK 73190. □



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**Warnings:** Verapamil should be avoided in patients with severe LV dysfunction (eg, ejection fraction < 30%) or moderate to severe symptoms of cardiac failure and in patients with any degree of ventricular dysfunction if they are receiving a beta-blocker. Control milder heart failure with optimum digitalization and/or diuretics before Calan SR is used. Verapamil may occasionally produce hypotension. Elevations of liver enzymes have been reported. Several cases have been demonstrated to be produced by verapamil. Periodic monitoring of liver function in patients on verapamil is prudent. Some patients with paroxysmal and/or chronic atrial flutter/fibrillation and an accessory AV pathway (eg, WPW or LGL syndromes) have developed an increased antegrade conduction across the accessory pathway bypassing the AV node, producing a very rapid ventricular response or ventricular fibrillation after receiving I.V. verapamil (or digitalis). Because of this risk, oral verapamil is contraindicated in such patients. AV block may occur (2nd- and 3rd-degree, 0.8%). Development of marked 1st-degree block or progression to 2nd- or 3rd-degree block requires reduction in dosage or, rarely, discontinuation and institution of appropriate therapy. Sinus bradycardia, 2nd-degree AV block, sinus arrest, pulmonary edema and/or severe hypotension were seen in some critically ill patients with hypertrophic cardiomyopathy who were treated with verapamil.

**Precautions:** Verapamil should be given cautiously to patients with impaired hepatic function (in severe dysfunction use about 30% of the normal dose) or impaired renal function, and patients should be monitored for abnormal prolongation of the PR interval or other signs of overdosage. Verapamil may decrease neuromuscular transmission in patients with Duchenne's muscular dystrophy and may prolong recovery from the neuromuscular blocking agent vecuronium. It may be necessary to decrease verapamil dosage in patients with attenuated neuromuscular transmission. Combined therapy with beta-adrenergic blockers and verapamil may result in additive negative effects on heart rate, atrioventricular conduction and/or cardiac contractility; there have been reports of excessive bradycardia and AV block, including complete heart block. The risks of such combined therapy may outweigh the benefits. The combination should be used only with caution and close monitoring. Decreased metoprolol and propranolol clearance may occur when either drug is administered concomitantly with verapamil. A variable effect has been seen with combined use of atenolol. Chronic verapamil treatment can increase serum digoxin levels by 50% to 75% during the first week of therapy, which can result in digitalis toxicity. In patients with hepatic cirrhosis, verapamil may reduce total body clearance and extrarenal clearance of digoxin. The digoxin dose should be reduced when verapamil is given, and the patient carefully monitored. Verapamil will usually have an additive effect in patients receiving blood-pressure-lowering agents. Disopyramide should not be given within 48 hours before or 24 hours after verapamil administration. Concomitant use of flecainide and verapamil may have additive effects on myocardial contractility, AV conduction, and repolarization. Combined verapamil and quinidine therapy in patients with hypertrophic cardiomyopathy should be avoided, since significant hypotension may result. Concomitant use of lithium and verapamil may result in a lowering of serum lithium levels or increased sensitivity to lithium. Patients receiving both drugs must be monitored carefully. Verapamil may increase carbamazepine concentrations during combined use. Rifampin may reduce verapamil bioavailability. Phenobarbital may increase verapamil clearance. Verapamil may increase serum levels of cyclosporin. Verapamil may inhibit the clearance and increase the plasma levels of theophylline. Concomitant use of inhalation anesthetics and calcium antagonists needs careful titration to avoid excessive cardiovascular depression. Verapamil may potentiate the activity of neuromuscular blocking agents (curare-like and depolarizing); dosage reduction may be required. There was no evidence of a carcinogenic potential of verapamil administered to rats for 2 years. A study in rats did not suggest a tumorigenic potential, and verapamil was not mutagenic in the Ames test. Pregnancy Category C. There are no adequate and well-controlled studies in pregnant women. This drug should be used during pregnancy, labor, and delivery only if clearly needed. Verapamil is excreted in breast milk; therefore, nursing should be discontinued during verapamil use.

**Adverse Reactions:** Constipation (7.3%), dizziness (3.3%), nausea (2.7%), hypotension (2.5%), headache (2.2%), edema (1.9%), CHF, pulmonary edema (1.8%), fatigue (1.7%), dyspnea (1.4%), bradycardia: HR < 50/min (1.4%), AV block: total 1°, 2°, 3° (1.2%), 2° and 3° (0.8%), rash (1.2%), flushing (0.6%), elevated liver enzymes, reversible non-obstructive paralytic ileus. The following reactions, reported in 1.0% or less of patients, occurred under conditions where a causal relationship is uncertain: angina pectoris, atrioventricular dissociation, chest pain, claudication, myocardial infarction, palpitations, purpura (vasculitis), syncope, diarrhea, dry mouth, gastrointestinal distress, gingival hyperplasia, ecchymosis or bruising, cerebrovascular accident, confusion, equilibrium disorders, insomnia, muscle cramps, paresthesia, psychotic symptoms, shakiness, somnolence, arthralgia and rash, exanthema, hair loss, hyperkeratosis, macules, sweating, urticaria, Stevens-Johnson syndrome, erythema multiforme, blurred vision, gynecomastia, galactorrhea/hyperprolactinemia, increased urination, spotty menstruation, impotence.

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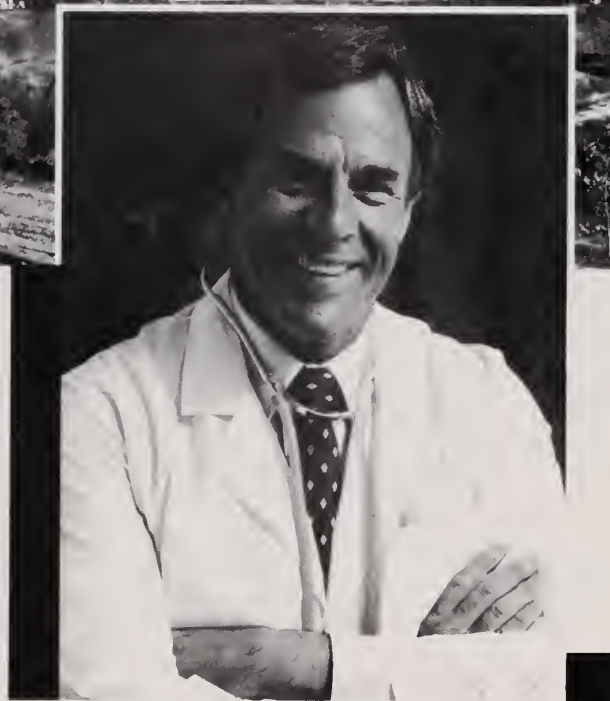
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# JOURNAL

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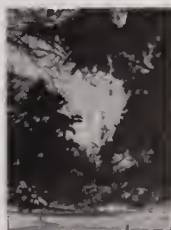
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**ON THE COVER**



Grain elevators in western Oklahoma are common landmarks. This one is in Kingfisher.

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## Science Transcends Politics

"Columbus sailed the ocean blue in fourteen hundred and nine-two." This childhood mnemonic remembered from grade school history class reminds us that the quinticentennial of that epic voyage is at hand. It will soon be five hundred years, or about twenty human generations, since a new venereal disease now known as syphilis was introduced to western Europe by Columbus' sailors.

Syphilis was injected into a population without immunity, and has a long incubation and a variable latency period, and inconsistent but fatal tertiary manifestations. Syphilis truly became a scourge and a pestilence. As a contagious infection driven by sexual energy, syphilis reverberated around the Western world for four hundred years before a reliable diagnostic test was developed or a consistently helpful chemotherapy was invented. The mortality of the syphilis epidemic is uncountable, and the morbidity unknowable. It is of historical interest that most nations exercised their police power to test for and to quarantine this contagion once a good test and treatment became available.

Compared to syphilis, our AIDS epidemic is now a new baby at ten years of age, and 1992 roughly corresponds to AD 1505 of the syphilis epidemic. With the genius of modern science at work, it seems unlikely that we must wait another 390 years for an arsphenamine or a "penicillin" for AIDS to be found. Already a serologic test of reasonable accuracy is widely available, and some palliative treatments are already known. The broad outline of AIDS' natural history and epidemiology is now visible, and the similarities to and differences from the syphilis epidemic are becoming manifest.

However, the lack of curative treatment and the inexorable death that results from this new venereal disease are dismaying. Two generations have now passed since the world has feared death from a lethal venereal disease, and we shudder at the return of darkness. The infective dose of AIDS virus is uncertain but apparently can be quite small in some circumstances. The long window of infectivity before clinical symptoms and a positive antibody test vitiate the concept of case prevention through behavior modification. Very few human beings will agree to curtail their behavior options.

Our collective social response to AIDS' biological threat has been badly muddled by the political aura emanating from the demography of AIDS' insertion into our society, and the present task is to think through the clutter of political attitudes. The immediate containment and the ultimate extinction of the AIDS virus is the goal.

A nurturing society encourages its healers to care for all the sick, but an ethical society does not require the healer to risk personal death to care for the fatally stricken. Mandated antibody testing, when exercised, should advance communal human interests. In some circumstances, the values of society and community must be able to supersede the desires of the AIDS victim; the disease may destroy human ethics and judgments through the dementia of cerebritis.

Eventually, we must deal with AIDS like our grandparents dealt with syphilis. Science transcends politics.

*Ray V. M. Intyre, M.D.*



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## **CALL FOR RESOLUTIONS**

All resolutions to be presented to the Oklahoma State Medical Association House of Delegates Annual Meeting must be received in the executive offices no later than thirty (30) days prior to the meeting. This year's meeting will be May 28-31, 1992, at the Marriott Hotel in Oklahoma City.

County medical societies or individuals wishing to submit resolutions should mail them to OSMA, 601 Northwest Expressway, Oklahoma City, OK 73118. Should you need assistance in drafting such resolutions, please contact the executive offices.

**RESOLUTIONS MUST BE SUBMITTED ON OR BEFORE APRIL 28, 1992**

## RE: The OSMA Physicians Recovery Program

In case you missed Dr Darrell Smith's article in the December issue of the OSMA JOURNAL, I urge you to pull it out and read it. This is a concise and well written summary of the effectiveness of our "home grown" Physicians Recovery Program.

The most impressive part documents the necessity, in most cases, of a thorough, and thus prolonged, program with a continuing post-treatment support system. The biggest hurdle at the onset of treatment is the cost. Effective programs are not cheap, and it appears that short-cuts lead only to wasted time and money, and missed or postponed opportunities.

It seems to me that the most stressful time for all concerned is the period leading up to the final decision to enter treatment. It often plays havoc with family, friends, and finances. Faced with three to four months of ongoing expenses plus the cost of treatment and absent cash flow, it is not surprising that delay in treatment is the norm just as patients delay diagnostic studies or surgical procedures when they have poor or no insurance coverage.

Most insurance companies, including PLICO, have been forced to limit coverage for alcohol or substance abuse. Even when there is coverage, the day-by-day



expenses can fragment or destroy family relationships.

What to do? Always the tough question.

PLICO Health was forced to adopt a policy of *one* treatment in a *lifetime*, and encourages treatment at the better centers.

The Physicians Recovery Program has had great success. The equivalent of a graduating class from Medical School has returned to practice, and just think of all the experience and talent that has been saved. Moreover, money lent, without interest, has been repaid with minimal loss. Only one who borrowed has failed to repay and that was the result of death in an auto accident.

Dr Smith and others who have given so much in time and effort are to be highly commended, and all of us must increase our financial support for the program. Yes, it is tax deductible.

Oh, by the way, there will be free soft drinks and juices but a cash bar at our Annual Meeting in May. We hope to reduce ticket prices and besides, we should not be perceived as enablers of those with problems.

Physicians have always been generous in helping worthy causes, and what can be more important than aiding our friends and their families?

*B. J. Seltzer M.D.*

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# Autoantibodies to Phospholipids—New Looks at Old Diseases — A Primer for Physicians

Gale A. McCarty, MD

Antibodies to negatively charged phospholipids (aPL) are associated with a wide clinical spectrum. Primarily the clinical problems present as localized and/or generalized thromboses, recurrent fetal loss, strokes, and various cytopenias. The clinical settings which would prompt the physician to consider aPL as causal or contributory to pathology in many organ systems are reviewed, and guidelines for screening and confirmatory testing are defined. Since effective treatments do exist to decrease or prevent morbidity, and in some cases, mortality, the generalist as well as the specialist should be aware of the many faces these primary and secondary syndromes present to them in daily practice.

Autoantibodies to negatively charged phospholipids (aPL) are associated with both intravascular phenomena and direct cell damage (Table 1<sup>1,2</sup>). aPL were initially identified in the sera of patients with systemic lupus erythematosus (SLE) who had recurrent fetal loss (RFL) and/or recurrent arterial and/or venous thromboses (RT).<sup>1-4</sup> However, there has been a growing recognition that aPL occurs in many patients who *do not have SLE*. These patients often present with RFL or recurrent thromboses, with less than four criteria for the diagnosis of SLE, and a positive aPL. These patients have the primary anti-phospholipid antibody syndrome (APS) (Table 2).<sup>5</sup> In the presence of SLE, patients with aPL and related features are defined as having secondary APS.

This review offers a practical approach to these

syndromes, the occurrence of aPL and methods of detection, a state-of-the-art view of possible mechanisms of action, the therapeutic interventions used in management of these patients, and lastly, highlights the research currently being conducted in this area.<sup>6</sup>

Table 1. Clinical Features Associated with Anti-Phospholipid Antibody (aPL)

Intravascular phenomena	Direct Cell Damage
Recurrent fetal loss (RFL)	Thrombocytopenia (TCP)
Intra-uterine growth retardation (IUGR)	
Recurrent thromboses (RT)	Hemolytic anemia (HA)
Cerebrovascular accidents (CVA)	
Transient ischemic attacks (TIA)	
Pulmonary thromboembolism (PTE)	
Deep venous thrombosis (DVT)	
Migraines	
Livedo reticularis rash	

Table 2. Primary Antiphospholipid Antibody Syndrome (APS)

1. Clinical features w/in SLE spectrum, but  $\leq 4$  ACR criteria
2. Presence of IgG/IgM aPL (moderate or high levels by ELISA)
3. At least two of the following:
  - a. Thrombocytopenia
  - b. Venous thrombosis
  - c. Arterial thrombosis
  - d. Hemolytic anemia
  - e. Livedo reticularis
  - f. Recurrent fetal loss

Direct correspondence to Gale A. McCarty, MD, Director, Arthritis/Immunology Program, Oklahoma Medical Research Foundation, 825 Northeast 13th Street, Oklahoma City, OK 73104.

# Clinical Features Indicating the Presence of aPL

While the best known features of aPL are its association with recurrent arterial or venous thromboses in any part of the circulation, and recurrent fetal loss, many other symptom complexes can be seen.<sup>6,7</sup>

Any organ system may be involved with aPL-related symptoms (Table 1). Patients with initial or recurrent thrombotic events occurring without known vascular injury, or predisposing factors such as diabetes, hypercholesterolemia or hypertriglyceridemia, and at a much earlier age than customary, are very likely to have aPL.<sup>1,2</sup> These are often ways in which the patient with aPL presents to the family medicine or internal medicine specialist. Some other clinical conditions associated with recurrent thromboses, such as deficiencies of anti-thrombin III, protein S and/or protein C, or acquired lupus anti-coagulants, must also be considered in the differential diagnosis here.

The gynecologist may also see aPL in a significant percentage of patients with infertility, and aPL can contribute to fetal death. Severe intrauterine growth retardation (IUGR) and pre-eclampsia occurs because of a vasculopathy in the placenta. The dermatologist may first see the aPL patient, because of a livedo reticularis rash which may be a marker for aPL (40% are positive when this rash is present) and is often the first clue on physical examination to its presence (Fig 1). Common clinical presentations to the vascular specialist, hematologist, or pulmonologist include initial or recurrent digital ischemia and infarcts, deep vein thromboses (DVTs), accelerated peripheral vascular disease (PVD), and recurrent pulmonary thromboemboli (PTE). The neurologist will see aPL patients presenting with minor/major cerebrovascular accidents (CVAs), transient ischemic attacks (TIAs), ischemic optic neuropathy, multi-infarct dementia, migraines, or transverse myelitis. Recurrent angioplasty or bypass graft failures, and medial or tricuspid valvulitis may also be due to unrecognized aPL, as well as autonomic dysfunction, and come to the cardiologist for diagnosis. The nephrologist may see hypertension in the setting of a hemolytic-uremic-like syndrome, thrombotic thrombocytopenic purpura (TTP), or a glomerulonephritis.

One rare but clinically impressive form of aPL-related disease is often first seen by the hematologist, and is called the "catastrophic coagulation syndrome," where multiple clots occur simultaneously in many organ systems, a picture often confused with the hemolytic-uremic syndrome, or disseminated intravascular coagulation.<sup>1,2,8</sup> Lastly, a vasculitis-type picture called Degos' disease can present to the

geon as mesenteric and CNS infarction with livedo reticularis.

# Occurrence

These syndromes are not uncommon.<sup>1,2,6,9</sup> One in seven SLE patients has aPL. aPL can be present in 20% to 60% of all SLE patients. The exact incidence of primary APS varies depending on the clinical features: for RFL, approximately 20% to 40% of patients may be aPL-positive; for migraines, 15% to 20%, and in cerebrovascular accidents, 15% to 20%. The figures in SLE patients with aPL for these subsets is probably higher, between 40% and 60%.

During one month, 8 inpatients were seen in consultation from several different services with aPL-



**Figure 1.** Livedo reticularis rash with cutaneous vascular infarction. A 19-year-old white male (Patient 4, Table 2), presented with this rash and infarct on his elbow, along with other features of the primary anti-phospholipid syndrome, including high sera levels of all three isotypes of aPL.



related symptomatology, representing one-third of the rheumatology consultations that month. Their actual presentations comprise Table 3. Once a patient is identified as aPL positive, between 20% and 25% of their family members are also considered at risk for aPL. Between 3 and 5 new patients with aPL are identified weekly in our lab from across Oklahoma and the USA.<sup>6,9</sup>

Irrespective of the clinical setting, the sequelae of aPL can be managed and often prevented from causing significant morbidity, and in some instances, mortality. Physicians in all disciplines should be cognizant of the existence of both these primary and secondary syndromes.

### aPL and Other Autoantibodies

aPL are often found as the only autoantibody in patient sera, especially when the primary anti-phospholipid syndrome (APS) is present, or along with other autoantibodies when SLE or other systemic rheumatic diseases are coincidentally present. aPL autoantibodies are not detected by the indirect immunofluorescence (IIF) anti-nuclear antibody test commonly used to screen for most nuclear and cytoplasmic autoantibodies using HEp-2 cells. aPL are also not detected by the IIF *Crithidia anti-DNA* antibody test, or the precipitin tests in agar for autoantibodies to calf or rabbit thymus extracts that are used (in addition to IIF) to detect other autoantibodies.

While most aPL are synonymous with autoantibodies to one negatively charged PL, cardiolipin (CL), recent data show that some patients who are aCL negative make an antibody to another negatively charged phospholipid, phosphatidyl serine (PS).<sup>6,7,9</sup> Anti-phosphatidyl serine (aPS) may actually be more common than aCL/aPL in some patient groups, including those with RFL, the cytopenias, or the primary APS.<sup>6,7,9</sup>

### Overview of the aPL Tests and Relation to Patient Presentation

The state-of-the-art technology now in use, the aPL ELISA test, has been standardized since 1983; it is one of three commonly available tests which can indicate the presence of an aPL in the sera: (1) the biological false positive serologic test for syphilis (BFP-STS), (2) the activated partial thromboplastin time (APTT), and (3) the aPL enzyme-linked immunosorbent assay (aPL ELISA)<sup>1,4,9,10,11</sup> (Table 4). The current recommendations for testing are that for optimum clinical utility, cost effectiveness, sensitivity and specificity, the APTT with mixing and the aPL

**Table 3. Common Presentations of Patients with aPL**

1. Subdural hematoma, and thrombocytopenia (TCP)
2. Recurrent fetal loss x 3
3. Recurrent deep vein thrombosis x 3 pulmonary thromboembolism x 2, thalamic stroke x 1
4. Peripheral vascular disease, PTE x 2, livedo reticularis, renal insufficiency, and TCP
5. Recurrent CVAs x 3 in a young patient w/o risk factors
6. Digital ischemia and renal insufficiency
7. Digital infarctions, R/O vasculitis
8. Failure of angioplasty x 2 with recurrent thrombosis

**Table 4. Autoantibodies to Phospholipids (aPL) Methods of Detection**

Antibody	Antigen	Test
A: Biologic false positive-serologic test for syphilis	Cardiolipin (CL) cholesterol, choline	BFP-STS (VDRL)
B: Lupus anticoagulant	Phospholipids	LA, APTT
C: Anti-cardiolipin (aCL)	Cardiolipin (CL)	aCL ELISA
D: Anti-phosphatidyl serine (aPS)	Phosphatidyl serine (PS)	aPS ELISA

ELISA be performed on patients suspected of having aPL.

Patients who have aPL are often first identified when premarital blood work shows a biologic false positive test for syphilis (BFP-STS). aPL detected by BFP-STS often occurs only in an IgM isotype, and is not as highly associated with thrombosis or fetal loss as is an elevated APTT or aPL. Another group of patients with aPL are identified during routine pre-operative coagulation screening. The APTT is elevated, and the patient is said to have the naturally occurring "lupus anticoagulant" (LA). A mixing test is then done with the addition of normal plasma. When the APTT corrects with normal plasma, this shows that the patient lacks a clotting factor. When there is no correction, then anti-phospholipid antibody is present. An elevated APTT has been primarily associated with fetal loss, preeclampsia, chorea gravidarum, and intrauterine growth retardation, but can be positive in any or all of the features associated with a positive aPL (Table 1).

Even though it is called the "lupus anticoagulant," it is a double misnomer, since these patients have thromboses, not free bleeding, and don't always have lupus. Not all patient plasma with abnormal APTTs



are positive when their concurrent sera is tested for aPL. Agreement between the APTT and aPL ELISA occurs in 0% to 70% of patients; the tests detect different antibodies, and the reasons for the differences and lack of correlation are an active area of research.

The aPL ELISA performed by the author was certified in 1986 and all three isotypes are reported. Not all commercial reference laboratories have been certified, nor do they perform all isotype determinations. aPL values are reported in terms of quantitative IgG phospholipid (GPL) or IgM phospholipid (MPL) units<sup>1,2,6,9-11</sup>.

#### aPL Testing

	IgG/IgM (GPL or MPL Units)	IgA (OD @ 405nm)
Neg	<10	<0.2
Low	10-20	0.2-0.5
Mod	20-100	0.5-0.8
High	>100	>0.8

In general, the severity of symptoms is proportional to the height of the IgG and/or IgM aPL antibodies. Most patients who have moderate or high levels of aPL deserve some form of treatment (see later sections); the minimum preventative treatment for patients with low aPL levels remains somewhat controversial. However, evidence is mounting that even patients with low aPL levels may also be more at risk for aPL-related problems than previously thought.

The same ELISA used to detect aCL is performed for APS, but PS is the antigen used.<sup>6,7,9</sup>

#### Isotypes of aPL and Clinical Features

As in other autoimmune responses, aPL can occur in several isotypes—immunoglobulin G (IgG), immunoglobulin M (IgM), and immunoglobulin A (IgA). These isotypes are important to determine because they may be differentially associated with certain symptom complexes. IgG aPL tend to be associated with most of the vascular damage and pathology, and often occurs with IgM aPL. IgM aPL antibodies may be more pathogenetic directly to cells, resulting in anemia and/or thrombocytopenia. IgA aPL have been associated with an increased risk for fetal loss in one study but not others, and IgG and IgA aPL often occur together.<sup>1,2,6,7</sup> Low titer IgM aPL may be the least clinically significant: concurrent rheumatoid factor positivity must be ruled out, as this can give a falsely positive low level IgM aPL in some instances.

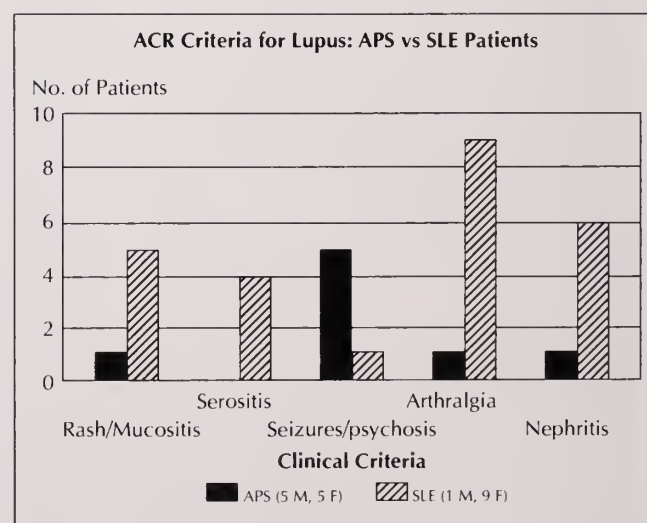
Patients with only an IgM aPL may be the least likely to have severe symptoms, but RFL and RT have been reported. In general, patients with *all three isotypes* of aPL (IgG, IgM, and IgA aPL) tend to have the *most severe disease*.

#### The Primary Anti-Phospholipid Syndrome vs SLE

There exists a distinctive group of patients who do not meet the American College of Rheumatology (ACR) criteria for lupus, and do not have other lupus-related autoantibodies or laboratory profiles. These patients are said to have the primary anti-phospholipid syndrome (APS)<sup>1,2,5</sup> (Table 2).

Primary APS is characterized by the features listed in Table 2, and are separable on clinical, as well as laboratory, parameters. While SLE has a characteristic sex ratio of 9:1, the incidence is almost equal between the sexes in primary APS.

The differences in clinical symptoms (Fig 2) and in laboratory profiles (Fig 3) between primary APS and SLE patients are comprised from our patients.<sup>6,9,12</sup> Arthralgia, nephritis, mucositis, and serositis are more common in SLE vs APS patients (Fig 2). Positivity of ANA, anti-DNA, anti-Sm, and presence of RBC casts contrast SLE patients vs APS patients, where autoimmune hemolytic anemia (AIHA) and thrombocytopenia (TCP) are more common (Fig 4).



**Figure 2.** ACR criteria for lupus in APS vs SLE patients: clinical features. The predominance of arthralgia, nephritis, mucositis, and serositis in SLE (shaded) vs APS (solid) patients clinically distinguishes these symptom complexes; seizures, psychosis, and supratentorial dysfunction is more common in the APS patients. The equal sex ratio of patients with APS, vs the female predominance in SLE, is also noted in these age-matched controls from OMH.

Lastly, *aPL-associated symptoms occur more frequently in APS vs SLE patients* (Fig 4). Differentiating these patients from SLE and its variants has important therapeutic and prognostic implications.

### Mechanisms of aPL Action

aPL can bind platelets without apparently activating them, but may increase platelet adhesiveness. aPL also bind to endothelial cells, and likely also increase their adhesiveness for other inflammatory cells, which may contribute to increased local vascular immune injury.<sup>1,2,13</sup> aPL are known to inhibit endothelial cell prostaglandin production, which may contribute to a thrombogenic potential at the cell surface level.

aPL may cause abnormal function of other endothelial cell surface molecules which interact with the blood clotting scheme. An acquired deficiency of protein S is another mechanism which is likely. aPL IgG has been shown to inhibit thrombomodulin.<sup>13</sup> The balance between thrombogenesis and fibrinolysis may be undermined. Recently, aPL have been shown to interfere with the normal function of beta 2 glycoprotein I (B2gpI), a naturally occurring anticoagulant directed at large macromolecules and therefore increase the tendency for thrombosis.<sup>14</sup> This scenario could go on anywhere in the vascular tree. B2gpI, called the "cofactor," may actually explain some of the lack of

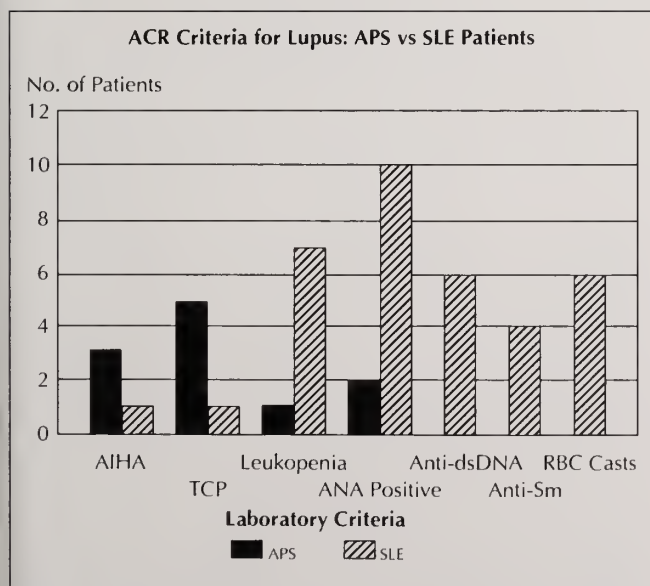
complete correlation between the APTT and aPL ELISA.

### Treatment for aPL

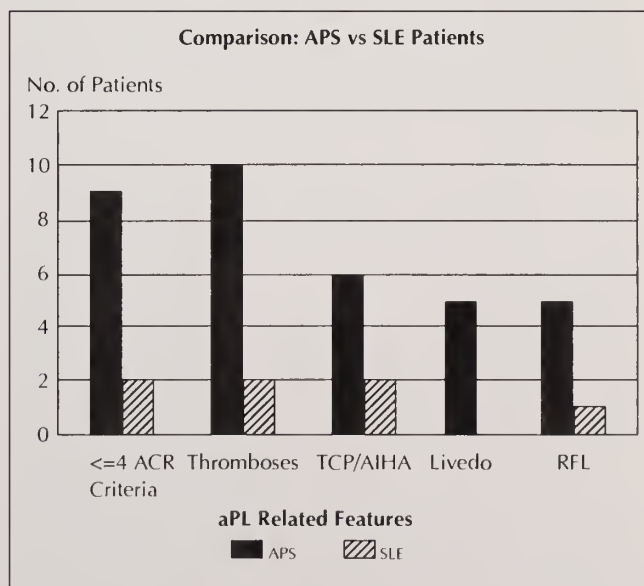
Many treatments have been shown to be effective in decreasing the amount of aPL antibodies, or in decreasing the incidence of RT or RFL indirectly by interference with the binding of aPL to target tissues.<sup>1,2,6</sup> These treatments are used singly or in combination:

1. Aspirin
2. Anticoagulants
3. Steroids (prednisone or prednisolone)
4. Cytotoxic agents - azathioprine (Imuran) or cyclophosphamide (Cytoxan)
5. Intravenous gamma globulin (IV IgG)
6. Plasmapheresis

Some treatments are used to decrease aPL levels in acute or progressive life-threatening situations, such as progressive neurologic disease or thrombocytopenia refractory to usual first line therapies; others are used as more prophylactic or chronic therapy. All these regimens require close monitoring, and if instituted promptly, can be useful in decreasing morbidity or mortality for patients. Adverse drug reactions can be decreased or prevented



**Figure 3.** ACR criteria for lupus in APS vs SLE patients: laboratory features. The low frequency of concurrent ANA, anti-dsDNA, and anti-Sm positivity distinguishes APS from SLE patients. The incidence of autoimmune hemolytic anemia (AIHA) and thrombocytopenia (TCP) is higher in most APS patients.



**Figure 4.** Comparison of anti-phospholipid-related features in APS vs SLE patients. aPL-associated features such as thromboses, TCP/AIHA, livedo reticularis, and RFL are more widely present in the APS patients.



in many situations. The benefits versus the risks of an individual treatment, compared to the level of morbidity, or mortality (in the case of some patients or the fetus) must first be considered by both the physician and the patient.

**1. Aspirin.** One baby aspirin a day, 60-81 mg, as opposed to an adult aspirin, 325 mg, is effective in decreasing the binding of aPL to platelets and other cells. Aspirin alone is not a treatment that decreases the amount of aPL detected by any of the tests. It acts by perhaps (a) decreasing the consequences of the aPL antibody binding to platelets and/or endothelial cells, or (b) prostaglandin inhibition. One aspirin is effective and is not associated with an increased risk of GI bleeding. Aspirin therapy can also be used in pregnant women and does not cause problems for the baby or mother during the pregnancy or at birth in terms of bleeding. In our experience, aspirin therapy has been safely used even with patients on coumadin.

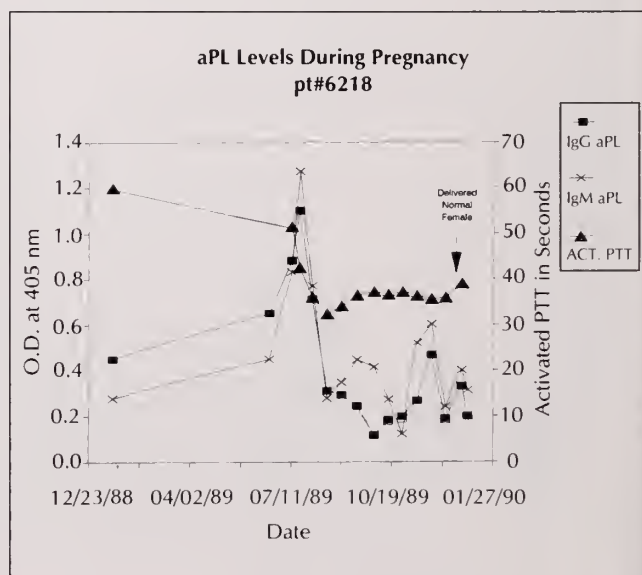
**2. Prednisone.** Corticosteroid preparations (commonly prednisone or prednisolone) PO or IV can be effective in decreasing aPL antibody. Initially, most regimens used 40 mg OD as the only effective dose to decrease aPL levels in patients, but it is becoming increasingly known that lower doses may be used to start (eg, 10-20 mg qd) and the patient may be rapidly tapered, if there is a good response with a drop in the aPL level as detected by serial aPL ELISA tests (Fig 5). Patients who have aPL detected only by the LA may exhibit a different time course of aPL response to prednisone versus patients who have aPL by ELISA, further pointing out the fact that these two different tests detect different autoantibodies (Fig 5). Pulse therapy (800 mg - 1 gm IV QD x 2-3d) has also been employed, but no controlled trials have been published to date. Our experience with 5 patients with high aPL who (symptomatic with aPL-related symptoms) have been treated with pulse therapy, shows excellent resolution of their symptoms, and approximately a 50% reduction in aPL levels within 5 to 7 days, some with prolonged suppression of aPL levels. None of these patients had steroid-related side effects.

Prednisone can have numerous long-term side effects and must be used with caution in patients who are diabetic, hypertensive, or osteoporotic. Long-term risks for osteoporosis, necrosis of bone, and infections are still present when drugs are used to treat aPL in the setting of a rheumatic disease or APS. However, when a CVA, MI, or RFL may be prevented with treatment, the benefits versus the risks must be carefully considered on an individual basis. Rigorous follow-up of the patient, from both the clinical and

laboratory standpoint, with frequent monitoring of aPL levels (prednisone therapy can decrease levels in 2 to 3 weeks) can be helpful to the physician in guiding him/her as to the rapidity of prednisone tapering appropriate for an individual patient. Supplemental daily calcium (1500 mg) is used to decrease steroid-associated bone loss. Figure 5 shows actual data from a patient that we have followed, and relates aPL levels to different treatments. The same side effects exist for PO versus IV steroids.

When an anti-inflammatory effect and abrogation of aPL effect is needed quickly, as in the case of patients with refractory autoimmune hemolytic anemia, thrombocytopenia, or acute/progressing stroke, QID IV steroids (1-2 mg/kg/d) or pulse therapy IV is usually used. Once there is a response in aPL levels, or more likely with stabilization of the index symptomatology, the patient can be switched to prednisone PO QD. QID steroids, like pulse therapy, can effect prolonged suppression of aPL levels in some patients, obviating the need for high doses of QD maintenance therapy PO.

**3. Azathioprine (Imuran).** When patients have steroid-related side effects which preclude long-term therapy, or do not respond with decreasing aPL levels, then azathioprine (Imuran) is used (50 to 150 mg



**Figure 5.** Independent response to steroid therapy for aPL antibodies detected by ELISA vs those determined by APTT testing. In this 25-year-old female (Patient 2, Table 3) with RFL, the APTT and aPL antibodies were both abnormal at the start of pregnancy. APTT remained high, but aPL increased dramatically at the end of the first trimester. Increased prednisone resulted in a normalization of aPL, but only a drop in the APTT.



per day) in divided dosages and after several weeks, may begin to have an effect on aPL levels. Patients who make aPL and have lupus with nephritis may already be on steroids, and azathioprine as anti-inflammatory therapy for their nephritis, but a dosage adjustment may be needed for aPL therapy. Azathioprine has some of the same risks as prednisone, including increased susceptibility to infections, but if the physician monitors the patient's blood and differential cell counts appropriately (q 1 month) these very rarely happen. The long-term risks for the possibility of a hematologic malignancy is slightly increased with azathioprine over a lifetime, at least from renal transplant data. Azathioprine is likely to be used in addition to aspirin and/or prednisone, rather than as a single agent by itself.

**4. Cyclophosphamide (Cytoxan).** Cyclophosphamide (Cytoxan) is another immunosuppressive agent that can be used PO or IV, unlike Imuran which is used only PO. Cyclophosphamide can be useful in some patients, where steroids or azathioprine are either not indicated, or do not work. Like azathioprine, however, cyclophosphamide may take 10 days to 2 weeks to cause lymphocytopenia and thus, there is a delay in effect, even with IV usage. Some patients have a better response to one immunosuppressive versus another. The physician follows the decrement in aPL levels and adjusts daily maintenance therapy, or the dosage of IV therapy once a month. Cyclophosphamide would usually be used in conjunction with aspirin and/or prednisone in treating aPL. The adjunctive use of high daily water intake is crucial to decrease bladder toxicity. IV Mesna therapy can be used monthly to decrease this side effect; although a PO form is not available at NIH, patients use the IV form PO.

**5. Intravenous Immunoglobulin G (IV IgG).** This therapy was first utilized in mothers who had RFL despite the above regimens, or were intolerant of the side effects of some of these medications. It is expensive, since it has to be given for a 3-to-5-day course once a month, which requires an extended daily clinic visit x 4d for infusion, or short-term hospitalization. The mechanism of action in aPL has not been specifically defined. Since it is pooled immunoglobulin, it may contain some anti-antibodies called anti-idiotypes, which react with aPL antibodies, and by complexing with them may prevent them from exerting their deleterious effects on blood vessels and cells.<sup>1-6</sup> IV IgG could possibly shut off aPL production by the immune system. Another way in which IV IgG might act is to fill nonspecifically all available

binding sites so that aPL do not have a place to bind, working through a blockade of the reticuloendothelial system. Recent data from the neurology literature and the American Neurology Association Anti-Phospholipid Antibody Stroke Study (APASS) would support the adjunctive use of IV IgG in the setting of acute or progressive neurologic events due to aPL.<sup>6</sup>

**6. Anticoagulants—Heparin and Warfarin (Coumadin).** Anticoagulants are also used in the management of aPL, and are available for IV and SQ use. Neither heparin nor warfarin abrogate aPL levels. Heparin given in divided doses BID SQ (which the patient can be taught to do him/herself, similar to giving one's self an insulin injection) is used when there are severe DVTs, PEs, and in some cases of CVAs, TIAs, or sagittal sinus thromboses. Continuous IV drip is used acutely. The heparin level is adjusted by following the APTT (which is difficult in some aPL patients who already have a chronically elevated APTT). Later, if the situation warrants continued anticoagulation for weeks or months, warfarin PO (Coumadin) is given with selected monthly prothrombin time (PT) determinations, aiming at a dosage that prolongs the patient to 1.5 to 1.7 times normal. Both heparin and warfarin (Coumadin) have to be carefully taken and monitored to prevent common side effects such as bruising and bleeding, or in the rare case of thrombocytopenia. These drugs are usually continued for a period of months after a major blood clot in an aPL-positive patient. When used in management of the aPL syndromes, there is some controversy as to the logistics and risks of discontinuing therapy, which has been associated with acute rethromboses.

### Current Research in the aPL Laboratory

Several studies are in progress in our laboratory: (a) Recurrent Fetal Loss and Pathophysiology, (b) Significance of Anti-Cardiolipin vs Anti-Phosphatidyl Serine in Subsets of Primary Anti-Phospholipid Syndrome (Cardiovascular and Neurologic Disease), (c) Characterization of A Human Hybridoma Anti-Phospholipid Antibody and Its Binding Characteristics, and (d) The Relationship of aPL to Endothelial Cell Antibodies.

In 1990, our hospital celebrated its first successful deliveries in 3/3 mothers with 8 previous losses who were identified and treated. Two more healthy infants were born in December 1991 and currently 3 more mothers await delivery. Over 200 patients have now been identified with aPL and neurologic, cardiovascular, or hematologic disease across the state, and

have benefitted from the early recognition of these disorders, and the institution of treatments designed to prevent recurrent thromboses. There are several international study groups involved with these aspects of aPL, such as the Kingston aPL Study Group (KAPS) headed by E. Nigel Harris, MD, who has done much to help standardize these assays, and to alert physicians as to the wide spectrum of aPL occurrence.

The aPL Study Group, which the author started in 1990 at the ACR, grew from 175 to 400 attendees in November 1991. It is important to continue screening studies to identify these patients at risk, to identify family members who also have a 25% chance of having aPL, and to expand these pilot research studies to define the most effective and least toxic treatment modalities for different subsets of aPL-related diseases.

### Summary

Autoantibodies to phospholipids such as cardiolipin and phosphatidyl serine have a widespread occurrence in general internal medicine, and other specialties. aPL can be associated with a localized or generalized vasculopathy characterized by thromboses and infarctions in any size vessel. Benign therapy, such as a baby aspirin, can be protective, and decrease morbidity and perhaps mortality in many patients, who seem to experience a cessation of the frequency of these events once specific therapy is undertaken. Aspirin does not augment aPL levels, and may not be safe as the only treatment in a patient with moderate or high levels, or during pregnancy. Certain second-level treatments such as prednisone, coumadin, and heparin are also very successful, and are often used in combination with low dose aspirin therapy, without attendant bleeding. Coumadin is not used during

pregnancy. Recent data suggests that low doses of prednisone may be useful for preventative maintenance therapy in some patients with these primary and secondary syndromes. J

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# Physician Scholarships and Loans in Oklahoma

C.S. Lewis, Jr., MD; Michael Lapolla, MHA; F. Daniel Duffy, MD

**T**he State of Oklahoma has funded several programs to attract new physicians, particularly in smaller communities. These programs have experienced considerable success.

Physician Manpower Training Commission (PMTTC) became a fully functional state agency on November 1, 1975.<sup>1</sup> Its mission was to improve the physician manpower distribution, both by type of practice and by geographic location, in Oklahoma. Recognizing that training enough physicians in primary care was absolutely essential for an effective placement program, the legislature provided partial funding of family practice, internal medicine, pediatrics, and obstetrics & gynecology training programs. The goal was to increase the number of graduate medical education positions within the state. Positions in internal medicine, pediatrics, and obstetrics & gynecology were originally funded at fifty percent of salary with state dollars. The family practice positions were fully funded.

In addition to increasing the training positions within Oklahoma, primary care physician placement programs were established. Two scholarship aid programs were implemented. This paper reports the outcomes of the two scholarship programs, and the companion community match program added in 1989.

This paper also reviews the communities in Oklahoma requesting physicians. The analysis will attempt to determine the degree to which these requests are fulfilled.

Dr Gerald Doeksen has estimated that a population of 3,000 persons is generally required to assure the economic viability of the practice of the one-year-trained general physician, and 3,500 population is required to maintain a practice of a three-year-trained family physician.<sup>2</sup> It is possible for a physician to practice serving a smaller population if a subsidy, such as by the National Service Corps, is provided.

## Methods

This analysis utilizes population data from the 1990 Census and physician manpower data from documents provided by the Oklahoma Board of Medical Licensure and Supervision (allopathic physicians) and the Oklahoma State Board of Osteopathic Examiners (osteopathic physicians).<sup>3,4,5</sup> Oklahoma communities were grouped by population size. Communities of 2,500 population were included assuming that the population of the surrounding areas would provide 3,000 people needed to support a medical practice. Communities of 7,500 people are included since these communities are the focus of the scholarship programs.

## Results of Scholarship Programs

The Oklahoma Rural Medical Education Scholarship Loan Program was initiated in 1976 and it remains in operation today. There have been 253 recipients of these scholarship loans. Currently, the awards are \$6,000 for the first year of medical school and \$10,000 for each successive year. The average loan has been \$15,300. The recipient may pay back the loan by serving one year in a community under 7,500 for each

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year of scholarship. Alternatively, the physician may pay back the total amount of the loan, with interest.<sup>6,7</sup>

The Oklahoma Community Physician Education Scholarship Loan Program was initiated in 1976 and was discontinued in 1988. During that time 92 students received scholarships.<sup>8,9</sup> These awards were \$10,000 for each year of medical school. They are funded \$5,000 by the community, and \$5,000 was matched by the state. The student could pay back the loan by serving the community of 7,500 or less for each year of scholarship aid. Alternatively, the loan could be paid back, with interest.

The Community Match Intern/Resident Program is a new program initiated in 1989. Any general practice or primary care physician is eligible to apply. The physician must be prepared to move to the community immediately. Furthermore, the physician must be approved by the community. To date, there have been 15 interns or residents who are receiving awards. The awards are for either \$20,000 or \$40,000, determined by the community. Half of the funds are provided by the community, and the other half are furnished by the state. Recipients may repay a \$20,000 obligation by serving for two years, or a \$40,000 obligation by serving three years.<sup>10</sup>

Of the 66 rural scholarship program recipients who have completed medical school and GME training, 128 (75%) were in practice in Oklahoma in 1991. Of these, 84 (66%) were practicing in towns under 7,500 population.

Of the 91 individuals who were recipients of the Community Physician Education Scholarships, 65

(79%) lived in Oklahoma in 1991 and of this group, 42 (65%) practice in towns under 7,500 population.

Only 48% of the non-scholarship students and residents live in Oklahoma, compared to 77% of all scholarship recipients.<sup>11</sup> Only 23% of the state's primary care physicians practice in communities under 7,500 population, compared to 51% of scholarship recipients.

Eleven (11) of 15 Community Match Interns/Resident Program recipients are in communities under 5,000. Of the 15 physicians serving obligations, there are 9 MDs and 6 DOs. Almost half are serving in communities of 2,500 to 5,000, and one-fourth are serving in communities under 2,500.

The cost in state dollars of the Rural Medical Education scholarship is \$15,300 per recipient, and for the 1976-88 Community Match scholarship it was \$20,000 total outlay. The reconfigured Community Match program, started in 1989, has a cost of \$38,700 per recipient.

Tables 1 and 2 show the historical activity of these programs by medical profession.

### Oklahoma Communities Seeking Physicians

The Oklahoma Physician Manpower Training Commission, as of September 1991, has requests for approximately 324 physicians from 86 separate communities<sup>14</sup> as shown in Table 4. Eleven (11) of these communities are under 7,500 and had no full-time physician in 1991. These communities also are losing population. Only one (Noble, near the growing community of Norman) had a significant gain.

Table 1. Summary of Rural Scholarship Program Recipients<sup>12</sup>  
(Percentages are of the total number of recipients)

	OU-Tulsa		OU-OKC		OCOM-OSU		Total	
Serving Obligation	6	(40%)	8	(10%)	16	(22%)	30	(18%)
Remaining After Obligation	5	(33%)	20	(26%)	24	(33%)	49	(30%)
Relocating After Obligation:								
Practice In Oklahoma	2	(13%)	7	(9%)	14	(19%)	23	(14%)
Practice Out of Oklahoma	0	(0%)	9	(12%)	10	(14%)	19	(11%)
Paid Off Loan:								
Practice In Oklahoma	2	(13%)	22	(28%)	2	(3%)	26	(16%)
Practice Out of Oklahoma	0	(0%)	12	(15%)	7	(10%)	19	(11%)
Total Recipients	15	(100%)	78	(100%)	73	(100%)	166	(100%)
Practicing in Oklahoma	15	(100%)	57	(73%)	56	(77%)	128	(77%)
Practicing in Communities Under 7,500	11	(73%)	28	(36%)	45	(62%)	84	(51%)

There are only two communities under population 3,000 that are more than 20 miles from a physician or hospital. They are Clayton and Grandfield. Both of these communities experienced a population decline over the past decade. That decline averaged 18%.

The wants of a community are expressed in Table 4. The number and types of physicians desired by communities, arrayed by size, shows that the greatest desire is by communities of less than 15,000. These

communities desired 57% of all physicians. General and family physicians (116, or 36% of total), medical specialists (46, or 14%) and internists (40, or 12%) are the most desired.

### Distribution of Physicians in Rural Areas and Small Communities

In 1990 the population of Oklahoma was 3,145,585.

**Table 2. Summary of Community Match Scholarship Program Recipients<sup>13</sup>**  
(Percentages are of the total number of recipients)

	OU-Tulsa		OU-OKC		OCOM-OSU		Total	
Serving Obligation	1	(7%)	4	(11%)	2	(5%)	7	(8%)
Remaining After Obligation	5	(33%)	10	(28%)	13	(34%)	28	(31%)
Relocating After Obligation:								
Practice In Oklahoma	1	(7%)	2	(6%)	6	(16%)	9	(10%)
Practice Out of Oklahoma	0	(0%)	3	(8%)	8	(21%)	11	(12%)
Paid Off Loan:								
Practice In Oklahoma	6	(40%)	10	(28%)	5	(13%)	21	(24%)
Practice Out of Oklahoma	2	(13%)	7	(19%)	4	(11%)	13	(15%)
Total Recipients	15	(100%)	36	(100%)	38	(100%)	*89	(100%)
Practicing in Oklahoma	13	(87%)	26	(72%)	26	(68%)	65	(73%)
Practicing in Communities Under 7,500	6	(40%)	15	(42%)	18	(47%)	39	(44%)

\* There were 91 recipients with one from Oral Roberts University and one from University of Arkansas. These two recipients are not included in the table above.

**Table 3. Oklahoma Communities Without a Physician and Requesting Assistance From the PMTC<sup>15</sup>**

Community	Bureau of the Census Population				Alternate Services	
	1980	1990	Change	% Change	Nearest Facility	Miles
Clayton	833	636	-197	-24%	Antlers	39
*Grandfield	1,445	1,224	-221	-15%	Frederick	34
Sub-totals	2,278	1,860	-418	-18%		
*Hominy	3,130	2,342	-788	-25%	Pawhuska	20
Elmore City	582	493	-89	-15%	Pauls Valley	19
Minco	1,489	1,411	-78	-5%	El Reno, Moore or Chickasha	18
*Afton	1,174	915	-259	-22%	Vinita	15
Bokchito	628	576	-52	-8%	Durant	15
Caddo	923	918	-5	-1%	Durant	12
Choteau	1,559	1,171	-388	-25%	Pryor	10
Davenport	974	979	5	1%	Stroud or Chandler	7
Noble	3,497	4,710	1,213	35%	Norman	7
Sub-totals	13,956	13,515	-441	-3%		
Grand Total	16,234	15,375	-859	-5%		

\* Physician left community after February 1990.

There are 589 incorporated communities, in which 2,387,537 persons lived.

The census showed that 499,168 people lived in unincorporated locales in rural counties and 258,880 live in unincorporated places in urban counties. All of the communities over 2,500 (except one, Heavener) are served by a physician living within the community.<sup>17</sup>

There are 472 communities with a population of less than 2,500. Their combined population was 280,520, representing 9% of the Oklahoma population. Eighty-six (86) of these communities have a

physician living and practicing within the community.

There are 122,326 people living in incorporated areas of rural counties who must travel to a different community for physician services. This is 3.9% of the state population.

As shown in Table 5, there are 7 communities with populations of between 2,500 and 15,000 that are without a physician. All of the communities except Heavener (population 2,601) are incorporated communities within large urban centers.

Table 4. Number of Physicians Sought by Size of Community and Specialty Group<sup>16</sup>

	<2.5k	2.5-7.5k	7.5-15k	15-30k	30-100k	Over 100k	Total
Family/General	29	30	29	9	8	11	116
Medicine Specialties	0	4	3	10	18	11	46
Internal Medicine	1	10	9	8	4	8	40
Surgical Specialties	0	9	13	5	4	5	36
Obstetrics/Gynecology	0	7	8	4	4	3	26
General Surgery	1	7	4	1	1	2	16
Pediatrics	0	1	7	3	2	3	16
Emergency Medicine	0	7	1	5	1	0	14
Psychiatry	0	2	0	4	0	1	7
Hospital Specialties	0	2	1	1	1	1	6
Pediatric Specialties	0	0	0	0	0	1	1
Total Physicians	31	79	75	50	43	46	324
Percent of Total	10%	24%	23%	15%	13%	14%	100%

Table 5. Oklahoma Communities, Population and Physician Services for 1990<sup>18</sup>

Community Size	Communities in Oklahoma 1990 Census				Number of Physicians in 1990			
	Number	w/Phys	Population	% Pop	MD	DO	All	%Phys
Unincorporated (Rural)*	...	...	499,168	16%	...	...	...	...
Unincorporated (Urban)*	...	...	258,880	8%	...	...	...	...
Sub-total Unincorporated	...	...	758,048	24%	...	...	...	...
Under 2,500	472	86	280,520	9%	97	71	168	4%
2,500 - 7,500	72	67	298,692	9%	237	125	362	8%
7,500 - 15,000	20	18	213,721	7%	254	73	327	7%
15,000 - 30,000	13	13	265,059	8%	376	43	419	9%
30,000 - 100,000	10	10	517,524	16%	765	98	863	18%
Over 100,000	2	2	812,021	26%	2,298	287	2,585	55%
State of Oklahoma	589	196	3,145,585	100%	4,024	697	4,724	100%

\* Note: Rural (63) and Urban (14) counties are those designated by the Bureau of Census.



## Conclusions

- The state physician scholarship programs are working well. Much of the state is served by physicians in local communities. A few communities may need special assistance in attracting physician services.

- The Oklahoma scholarship programs have been effective. There are 77% of scholarship recipients practicing in Oklahoma, compared with 48% non-scholarship graduates from Oklahoma primary care GME programs. Scholarship recipients are twice as likely to practice in communities under 7,500 people. Fifty-one percent (51%) of the scholarship recipients practice in Oklahoma communities with populations of less than 7,500, compared to 23% of Oklahoma's primary care physicians.

- The majority of Community Match Interns/Resident Program recipients are practicing in communities with populations under 5,000; one of four is serving in a community under 2,500; and almost half are serving in communities of 2,500 to 5,000.

- The cost of placing a physician in a smaller community is quite modest. The direct cost of placing a physician in smaller community via the Rural Scholarship Program is about \$15,300. The discontinued Community Match Program cost about \$20,000 per physician. The new Community Match Intern/Resident Program cost about \$38,700 per recipient.

- Very few Oklahomans are unserved by a physician in the local community. There are only 11 Oklahoma communities who have requested assistance from the Physician Manpower Training Commission in locating a physician, who remain without a physician. Only 2 of those 11 communities were further than 20 miles from a physician/hospital. They had a combined population of 1,860 people and represented only 0.06% of the state population.

- Only one in 25 persons living in a city or town must leave that community for physician services. An estimated 3.9% of the population lives in cities or towns without a physician.

- There are 117 incorporated communities with a population of more than 2,500. Only one, Heavener, in southeastern Oklahoma, was not served by a physician.

- Communities having difficulty attracting a physician might be best served by targeted and customized assistance. The state has been well served by scholarship and loan forgiveness programs. However, it is unlikely that every community will have its perceived needs met by any program. The data show that there are only two communities without a physician, seeking physician services, that are farther than 20 miles from existing services. Rather than wait for a single physician to locate in these towns, it seems appropriate for officials to intervene directly by initiating conferences with surrounding communities to fashion a specific solution for a specific community.



## End Notes

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18. Ibid.

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# The Feasibility of Mandatory HIV Testing for Health Professionals and Other Special Populations

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Infection with the human immunodeficiency virus (HIV) has become an increasingly important public health problem. Due to the profound increase in the incidence of the disease, testing has become an important tool in prevention efforts as well as treatment. In view of the dire prognosis associated with the diagnosis of HIV infection, there is a great deal of interest in mandatory HIV testing of special groups. Mandatory testing has been implemented for several groups such as the United States military. However, there are a number of issues to be considered before implementing a mandatory testing program. These include the predictive value and accuracy of the tests themselves, confidentiality and the social ramifications of breaches in confidentiality, the likelihood of forcing high risk persons underground to avoid testing, and the constitutionality of a mandatory testing policy. Since the discovery of the apparent transmission of HIV infection from a dentist to his patients, there has been increasing interest in a policy mandating the testing of health professionals. However, in view of the low risk of transmission to patients, it would be ill-advised to require HIV testing of health care workers. In general, the benefits of a mandatory testing policy do not outweigh the human and financial costs it would engender.

**T**he human immunodeficiency virus (HIV) has been in the United States since 1981. Since that time thousands of people have been infected. Many of those have developed Acquired Immune Deficiency Syndrome (AIDS) and died. The majority have been

members of the high risk groups associated with this disease: (1) homosexual and bisexual males, (2) intravenous drug abusers, (3) hemophiliacs and others receiving blood products, and (4) the heterosexual partners of persons in one of the other risk groups.<sup>1</sup>

The incidence of HIV disease has been growing astronomically. Public health officials have been working diligently to find ways to slow the spread of this dread disease. One of their basic tools is the surveillance of those infected with the virus. Surveillance has four basic objectives. These include (1) understanding the spread of the disease (incidence and prevalence rates and trends), (2) targeting effective prevention efforts, (3) assisting in the planning for future resources, and (4) providing society with information.<sup>2</sup> The primary method of surveillance is the reporting of cases to the Centers for Disease Control (CDC) in conjunction with testing and treatment of persons with the infection. This paper will examine the issue of mandatory HIV testing of special populations including health care professionals.

## HIV Testing

There are a number of reasons for doing HIV testing. Some of those reasons are therapeutic in nature. These include the establishment of a diagnosis, development of a prognosis, and assistance in developing appropriate therapy. Another reason is the prevention of the spread of the HIV infection through blood transfusion or tissue transplantation by the identification of infected tissues. Certainly another very important reason for testing is to guide efforts to limit the spread of the disease.<sup>3</sup>

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The CDC has recommended serologic testing of several groups of people thought to be at increased risk for having the infection. These include the high risk groups mentioned above. In addition, they recommend testing persons with clinical or laboratory evidence of disease, persons born in places such as Haiti or central African countries where the prevalence of heterosexual transmission is high, male and female prostitutes and their partners, and newborn infants of high-risk or infected mothers.<sup>1</sup>

### Proposals for Mandatory Testing

Mandatory HIV testing of specific populations has been considered for several groups. It has been instituted for blood donors, military personnel, State Department Foreign Services officers and their dependents, and Peace Corps and Job Corps applicants.<sup>4</sup> Premarital HIV testing has been mandated in Illinois and Louisiana.<sup>5</sup> Other populations in which it has been suggested include persons committing sexual offenses, food handlers, health care workers, prisoners, immigrants, school children, hospitalized patients,<sup>6,7</sup> and patients in sexually transmitted disease (STD) clinics.<sup>8</sup>

There are several criteria that must be considered before establishing any mandatory HIV testing programs. The first is that the population in question should serve as a high reservoir of infection. Second, there must be a significant risk of transmission to others. The test results obtained must be used effectively. The consequences of screening in HIV disease are considerable. These should not outweigh the benefits of screening. Furthermore, there should be no less restrictive or intrusive means available for achieving the objective.<sup>8</sup>

### HIV Antibody Testing

Before continuing further, it would be instructive to look at the means by which HIV testing is done. A test for detecting antibodies to HIV has been commercially available since 1985. This test, the enzyme-linked immunoassay (ELISA), was first used in testing donated blood for infectious units.<sup>9</sup> This test is highly sensitive, which means that a person with the disease has a high probability of having a positive test result. A review of three commercially available kits indicates their sensitivities range from 93.4% to 99.6%.<sup>3</sup> The test is also highly specific, which means that a person without the disease has a high probability of having a negative test result. A review of commercially available kits indicates specificities of 99.22% to 99.82%.<sup>3,9</sup>

Since screening tests are not always 100% accurate, some people who do not have the disease will have a positive test result (false positive). These people will believe they are infected when in fact they are not. This is a very serious consequence when testing for HIV infection. A positive test report may have many social and economic consequences for the person tested. In order to limit the number of false positives, the ELISA is confirmed by another test known as the Western Blot. This test is not used as the primary test because it is a time consuming process and is more expensive to perform.<sup>3</sup>

Persons with a repeatedly positive ELISA test and a positive Western Blot are considered to be infected. The use of two different tests should lead to a decrease in the number of false positives. However, the Western Blot is not foolproof. It, too, can produce false positives. It has been suggested that the biologic factors that lead to false positives on the ELISA can

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*Should we spend millions of dollars testing people, many of whom will not even have the disease?*

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lead to false positives on the Western Blot as well.<sup>3</sup> This means that some ELISA false positives will be confirmed by Western Blot false positives. Furthermore, in some cases the Western Blot has an indeterminate result. It's not quite positive and not quite negative. Only recently has it been determined that an indeterminate result does not necessarily mean infection, even in a person with positive risk factors.<sup>10</sup> In the past, some people with an indeterminate Western Blot pattern were told they were infected when they may not have been. Therefore, the meaning of a positive result in HIV screening will be dependent on the joint false positive rate of the two tests.<sup>11</sup> The accuracy of the Western Blot is critical, since there is no other test available which can accurately identify persons infected with the virus.<sup>3</sup>

The predictive value of a positive test is the proportion of true positives among those with positive test results. The predictive value of a test is dependent on the prevalence of the disease in the population being studied. The higher the prevalence is, the higher



is the predictive value of the test.<sup>11</sup> Conversely, in a low prevalence population, the predictive value is decreased and the relative number of false positive test results increases. The ELISA was developed to identify infected units of blood. The threshold for calling a test result positive was set low in order to identify as many units of potentially infected blood as possible. Under those circumstances, a low threshold was highly desirable and the consequences of a false positive test were negligible. However, in populations where the consequences are much higher, a different diagnostic threshold should be used. Therefore, the criteria for calling a test positive should be adjusted for the population being studied.<sup>3</sup>

A major concern in routine or mandatory HIV screening is the consequences of a false positive test. Many of the populations suggested for mandatory screening are at a low risk for having the infection. Examples of these include engaged couples, blood donors, and school children. Testing under these circumstances is likely to result in more false positives than true positives.<sup>3</sup>

Some are concerned that a massive screening program would only compound the false positive problem. If more tests were being done, the possibility would exist for tests to be done less carefully than they are now. A high ELISA false positive rate likely would occur in screening low risk populations, resulting in a sharp increase in the number of Western Blots performed. While the number of labs doing those tests would probably increase, quality control might not. In addition, with more labs doing the test, with its inherent complexity, the criteria for a positive test might become less stringent than those currently used. Consequently, there could be an increase in the number of false test results. While all this is only speculation, the result could be a "social catastrophe."<sup>11</sup>

### Issues in Mandatory Testing

A number of issues are raised by the consideration of mass testing for HIV infection. The first is financial.<sup>7</sup> The money required to conduct such a program for even one of the suggested groups is a multimillion dollar per year proposition.<sup>5,12,13</sup> There is a limited amount of money that can be devoted to this one disease. The issue then becomes proper allocation of these resources. Should we spend millions of dollars testing people, many of whom will not even have the disease? Or, should that money be spent on research and medical treatment for those who do have the disease? Furthermore, an emphasis on identifying seropositive persons through mandatory testing would

detract from prevention efforts aimed at the rest of the population.<sup>13</sup>

Confidentiality of test results is a major concern. All medical records are supposed to be treated confidentially. However, HIV testing is unique when compared to other medical procedures, in that it can suggest the person tested has engaged in behaviors that are socially unacceptable.<sup>14</sup> Breaches in confidentiality can have devastating results on the affected individual. That person may lose family, friends, housing, and his or her job and health insurance. These consequences are not to be taken lightly. The problem is that strict confidentiality cannot be guaranteed. AIDS is a reportable disease in all states.<sup>15</sup> In addition, HIV infection is reportable in the majority of states.<sup>2</sup> Consequently, physicians are required by law to report cases of AIDS and HIV infection to their state health department. In addition to the state health department, physicians may have a legal re-

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## *The consequences of a false positive result are potentially devastating to the individual.*

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sponsibility to report the infection to specific persons at risk for contracting the disease from the patient in the event the patient refuses to notify the person(s) him/herself. The constitutionality of these requirements has been upheld in the courts.<sup>16</sup> It has been suggested that assurance of confidentiality is impossible and the focus should be placed on developing effective antidiscrimination laws to protect those whose seropositivity is made known.<sup>16</sup>

The lack of guaranteed confidentiality would significantly hamper any mandatory screening efforts. Several studies of persons attending alternate testing sites that provide anonymous testing have shown that many people (ranging from 20% to 60%) would avoid being tested, if the tests were conducted confidentially with notification of the health department.<sup>17-21</sup> One study evaluated the number of people tested in testing sites on both sides of the South Carolina - Georgia border before and after mandatory HIV reporting was instituted in South Carolina. There was a significant increase in the number of South Caro-

lina residents crossing the border into Georgia to avoid being reported to the health department.<sup>19</sup>

Failure to provide strict confidentiality would result in persons at high risk not being tested for fear their seropositive status would become known to others. One study of STD clinic patients showed that persons who refused HIV testing were 5.3 to 8.8 times more likely to be infected depending on the demographic group to which they belonged.<sup>22</sup> This is an indication that those most at risk for HIV disease will avoid testing, if confidentiality is not assured. Avoidance of testing will most likely result in a lack of knowledge of one's HIV serologic status. This is important because it has been shown that knowledge of seropositivity can reduce some high risk behaviors in gay males.<sup>23</sup> Therefore, avoidance of testing which results in ignorance of one's seropositive status could seriously limit possible reductions in the spread of the disease stemming from decreases in high risk behaviors.

One reason for screening people is the early identification of disease so that treatment can be started to cure or at least slow the progression of disease.<sup>11</sup> Since there was no known treatment for the disease for several years, lack of treatment options was an argument against screening programs for HIV disease. This has changed somewhat in recent years. Although there is still no cure for the disease, treatment that can slow the progression of the disease is available. Zidovudine is now recommended for the treatment of asymptomatic HIV-infected patients with low CD4 lymphocyte counts.<sup>24</sup> In addition, there are other therapies recommended for the prophylaxis of *Pneumocystis carinii* pneumonia, a major cause of morbidity and mortality in HIV patients.<sup>25</sup> These treatments offer some reason to provide screening of high-risk populations. However, since the predictive value of a positive test in low prevalence populations is low, they do not justify screening low risk populations.

As discussed earlier, there is a high rate of false positive test results in the current regimen for HIV testing. This is particularly true for populations with low prevalence of disease. The consequences of a false positive result are potentially devastating to the individual. This in itself is a good reason not to require HIV testing in most populations. The costs of testing far outweigh the potential public health benefits.

In view of the seriousness of the disease and its consequences, the provision of counseling for people with positive tests is an important issue raised in mass testing.<sup>7</sup> Mandatory HIV testing is unique in

that the individual being tested is forced to confront a dire prognosis without voluntary agreement.<sup>14</sup> Counseling is a prerequisite to humane and compassionate care and is generally provided before and after testing. It is an absolutely necessary accompaniment to HIV testing of any kind. The counseling aspect of testing is a major component of the cost of testing. The expense of counseling alone will constitute one-third to one-half of the total cost of HIV testing.<sup>5,12</sup> This again calls into question the efficiency and efficacy of spending large amounts of money to test large numbers of low risk people.

There are some positive aspects to doing large scale testing. It would certainly add greatly to the epidemiologic information about the spread of the disease in this country. This could provide beneficial health planning information to assist us in preparing for the rapidly growing need for health care services in the face of this epidemic.<sup>14</sup> However, these benefits do not outweigh the heavy personal and economic costs resulting from a mandatory testing program.

There are a few other arguments against mandatory testing that are particularly convincing. The first is that civil liberties given up in an epidemic are rarely recovered when the epidemic is over. A second is that high risk persons should abstain from or at least reduce risky behavior regardless of their antibody status.<sup>7</sup>

### Legal Aspects of Mandatory Testing

The state health departments derive their legal authority from the police powers of the states to protect the well being of their citizens.<sup>26</sup> However, any action the health department takes must pass the test of constitutionality. In order to do this, two conditions must be met. First, there must be a rational connection between the action taken and the control of the disease. Second, the least restrictive, effective measures must be chosen.<sup>27</sup> Few, if any, of the more drastic possible public health measures, such as quarantine, have passed both of these tests. Mandatory testing, in and of itself, has not been demonstrated to be sufficiently effective in decreasing the incidence of HIV infection to justify a mandatory testing policy. On the case of mandatory HIV testing (*Glover vs Eastern Nebraska Community Office of Retardation*, March 29, 1988, No. CV-87-0-830) has come to the courts. It involved a Nebraska state agency providing social services to the mentally disabled. The agency wanted to impose mandatory testing of the employees coming in close contact with the clients as a condition of employment. The US District Court struck this down



as a violation of the Fourth Amendment right to freedom from unreasonable search. The judge further commented that mandatory testing was not the way to prevent the spread of the disease.<sup>28</sup>

Certainly, in reviewing the legality of mandatory testing the courts must carefully evaluate any legislation to determine that its primary goal is public health and not discrimination.<sup>29</sup> So, although there are mandatory HIV testing programs in place, the constitutionality of those testing requirements has not been completely addressed in the federal courts. It is possible that mandatory testing would be found unconstitutional.

### **Mandatory Premarital Testing—An Example**

It might be instructive to see the results of a mandatory testing program. Cleary, et al, reviewed premarital testing and projected the outcome should such a plan be implemented. If premarital HIV testing were implemented for the entire United States, the costs for all necessary screening and confirmatory testing with the requisite counseling would total approximately \$100 million dollars annually. They projected that more than 3.8 million people would be tested, and that of those tested, only 1,300 cases would be identified. They considered it likely that the virus would have been transmitted to at least 70 of those 1,300 people before testing occurred. The number of HIV-infected babies would likely be reduced by only 50% of the projected number of cases. They concluded that the costs far exceeded the benefits.<sup>12</sup>

Compulsory premarital HIV testing was instituted in Illinois in January, 1988. All marriage license applicants were required to show proof of testing and knowledge of the results by both partners. In the first year, of 155,458 people tested, only 26 people tested positive. The cost in the first year was \$5.4 million. The cost of detecting one seropositive person was \$217,641. By comparison, the cost of finding one seropositive person at one of the state's counseling and testing sites was only \$770 per person. This program proved to be very costly.<sup>30</sup> In addition, the number of marriage license applications abruptly decreased by 14%. Neighboring states experienced a corresponding increase in the number of marriage license applications. This suggests people were going out of the state to get married in order to avoid the testing requirement. This program did not pay off and the law was repealed in September, 1989. Since then the number of marriages in Illinois has increased.<sup>5</sup> We can learn from the experience of the state of Illinois.

### **Mandatory Testing for Health Care Professionals**

There has been a resurgence of interest in the mandatory testing of health care workers. This has come in the wake of the report of the first cases of HIV transmission from a health care provider to his patients.<sup>31,32</sup>

This case involved a dentist with AIDS who performed invasive dental procedures on his patients. Four of these patients became HIV positive after the procedures. In a thorough epidemiologic study of these cases, no other risk factors for HIV disease were found in three of the cases. In addition, the DNA sequence analyses of the HIV strains from these three patients were very similar to each other and to that of the dentist. All of this evidence strongly suggested that these were the first instances of transmission from a health care provider to a patient during an invasive procedure.<sup>31,32</sup>

As could be expected, this has caused quite an

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uproar. The first patient, who recently died of AIDS, sued and won a settlement from the dentist's malpractice insurer. She also filed a suit against the preferred provider organization (PPO) contracting with the dentist, claiming the PPO should have known the dentist was infected and should not have referred her and many other patients to him.<sup>33</sup> The case is still pending. However, if the patient wins her suit, the ramifications are far-reaching. It could certainly cause managed care organizations to demand their providers performing invasive procedures provide documentation of their HIV status. A dental insurance plan in Utah now requires dentists to undergo yearly HIV testing.<sup>34</sup>

The logistics of mandatory testing would be very difficult simply by virtue of the sheer numbers of tests that would have to be done. In addition, multiple tests on the same providers would be necessary because of their ongoing risk of infection from patient care activities. The same problems of false positives, privacy issues, and legal issues apply here as they would for



any other group for which mandatory testing has been proposed. There is certainly a precedent for prohibiting mandatory testing of employees as a condition of employment in the Nebraska case. It remains to be seen what stance the courts will take concerning testing of independent contractors.

A requirement for mandatory testing of health care providers has implications for the provision of health care to persons with or at high risk for HIV infection. There have been a number of documented cases of transmission of infection from an infected patient to a health care provider. The most common means of transmission is a needle-stick or other type of sharps injury.<sup>35,36</sup> The risk of infection from a percutaneous exposure has been estimated to be from 0.3% to 0.4%.<sup>35,37</sup> The risk is certainly low, but it does exist. If the result of becoming infected is the loss of a career with all of its social and economic ramifications, there would certainly be an incentive to avoid the small risk of infection by refusing to treat any HIV-positive patients. This could be devastating to the growing population of infected people in this HIV epidemic.

The CDC held meetings in February 1991 with health care providers concerning the development of a policy for dealing with HIV-infected health care workers. Mandatory testing was one of the options explored. The vast majority of those testifying at the meeting opposed such a move.<sup>38</sup> In July 1991, the CDC recommended voluntary testing and restriction of exposure-prone procedures among HIV-infected health care providers. Mandatory HIV testing was not recommended.<sup>39</sup>

The American Medical Association, the American Dental Association, and the American Academy of Orthopedic Surgeons have made recommendations in the wake of the finding of health care worker transmission of the virus to patients. All three organizations have recommended that infected providers stop performing invasive procedures or inform their patients of their seropositive status.<sup>40,41</sup> None of the groups has suggested mandatory testing of providers, although the American Academy of Orthopedic Surgeons offers voluntary HIV testing.<sup>40</sup> However, in June 1991, the New Jersey State Medical Society passed a resolution calling for mandatory testing of patients and health care workers.<sup>42</sup>

## Summary

HIV infection and AIDS have become a major public health problem in the United States. Although the problem has affected primarily members of the high

risk groups identified by the CDC, there is increasing evidence of heterosexual transmission. This means larger and larger segments of the population are at risk of becoming infected. This problem continues to demand the attention of public health officials.

A number of interventions have been proposed to slow the spread of the disease. One such intervention is the institution of mandatory testing of various segments of the population. There are a number of limitations to this approach. The available tests for HIV antibodies have a high proportion of false positive results in low risk populations. The result is that a relatively small number of infected people would be identified at great economic expense to the government and great social, emotional, and economic expense to those wrongly identified as being infected. A very large amount of money would be spent with very little return. The inability to guarantee anonymity of those being tested is another major drawback to mandatory testing. Furthermore, the constitutionality of such a policy has yet to be demonstrated. All in all, the costs far exceed the benefits. Since all of these findings are true for the other groups proposed for mandatory screening, it is ludicrous to require testing of health care providers. That would likely lead to demands for testing everyone. Such a policy cannot be justified.

On the surface, mandatory testing for HIV infection may seem like a good way of identifying those who are infected in order to reduce the spread of the disease and to refer them for medical treatment. However, it is neither practical nor reasonable. Our best efforts should be directed into research, extensive voluntary testing programs and campaigns to help people reduce their high risk behaviors and thereby curb the spread of the disease. □

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My students are dismayed when I say to them,  
 “Half of what you are taught as medical students will  
 in ten years have been shown to be wrong,  
 and the trouble is, none of your  
 teachers knows which half.”

— C. Sidney Burwell  
 Quoted by G. W. Pickering in  
*British Medical Journal*  
 2:113, 1956

## Routine HIV Testing?—You Bet!

Roy L. Forsythe, MD

In this commentary, the author explains his position favoring HIV testing for all health care workers and patients.

When we first heard about AIDS a few years ago we were content because it was a disease that only affected the "gay" community. Today the human immunodeficiency virus (HIV) has found its way into the heterosexual community through IV drug abusers, blood transfusions, organ donations, dental treatments by an infected dentist, heterosexual contacts with bisexual males, prostitution, etc.

It is now common knowledge that a high percentage of teenagers are having intercourse before marriage and seldom practice safe sex, thus a potential new source exists for the spread of the virus.

When we first began discussing routine HIV testing four or five years ago at Infection Control Meetings I was in favor of it. As a surgeon who spends his days with hands exposed to the patient's blood, I wanted to know if the patient had the virus so I could take extra extraordinary precautions to protect myself and the rest of the O.R. team. I understood then as I do now that a patient may test HIV negative and still carry the virus but at least in those cases where the patient was positive, I wanted to know. I still feel that way today.

In a *Newsweek* article a few months ago, Kimberly Bergalis, who died in December, blamed Doctor Acer and his colleagues who may have known about his

HIV status. Patients have a right to know if their physician is infected.

Kimberly Bergalis's own words were, "I blame Doctor Acer and every one of you bastards, anyone that knew Doctor Acer was infected and had full blown AIDS and stood by not doing a damn thing about it. You are all just as guilty as he was."

How long are we going to stand around and not do a damn thing?

After this article appeared in *Newsweek*, Kimberly Bergalis appeared before Congress in Washington, DC, to appeal for help.

What is the public's perception of the problem? According to a *Newsweek* poll, nine out of ten Americans think doctors should be required to tell their patients of their HIV status. When asked the question, "Should patients be required to tell physicians, dentists, and other health care workers if they are infected with the virus?" 97% said "yes."

On June 25, 1991, Vice-President Dan Quayle advocated testing all physicians and patients.

According to the Centers for Disease Control (CDC) in Atlanta, there have been 6,436 cases of AIDS in health care workers reported since the start of the epidemic in the early eighties. Most experts say these figures probably represent only a small proportion of infected health care workers since they are full blown reported cases of AIDS. Thousands more may have tested HIV positive. Others may be infected but symptom-free and, therefore, untested.

You might argue that in this part of the country we don't have a serious problem. Well, just this year a third-year medical student at a midwestern medical school died with cryptococcal pneumonia. The patient's

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Direct correspondence to Roy L. Forsythe, MD, 1227 East Ninth Street, Edmond, OK 73034.



autopsy showed a large cryptococcoma in the mediastinum and also that the patient had AIDS. He reportedly had a 50-pound weight loss in the year prior to his death and was married a month or two before his death. Premarital HIV testing would have alerted this patient to his condition and allowed life-prolonging treatment.

When I was a third-year student we started IV's, drew blood, assisted in surgery, changed surgical bandages, cleaned wounds, etc. What about this individual's exposure to all those patients, other students, faculty, family? Did this individual always use universal precautions? How long was this person infected? How many women did he have sex with? Who are they?

In the days when syphilis was a common sexually transmitted disease, all patients were tested on admission to the hospital, and the Health Department made an effort to trace contacts and answer the questions posed in the preceding paragraph.

What do you think will be the public response to our failure, as a medical community, to address these kinds of problems and issues? The answer is continued loss of respect for organized medicine and a turn to legislative authority which we have already seen.

I strongly support the testing, at least annually, of all physicians and health care workers. For the past two years I have done just that for myself and my office surgery staff.

People are not getting the help or services they need because they are afraid of what people will say. The stigma of "HIV positive" is out of proportion to the disease. People are afraid of the disease and of people who have it. Why? Because of the way we, the medical community, have elected to treat it. In the name of protecting the rights of "HIV positive" patients, we have put them at a disadvantage. We need a change in attitude by the medical community. This is an epidemic. Let's treat it that way.

What do we need? We need:

1. To remember first and foremost that people with this disease are someone's son or daughter, and we should treat them as if they were our own,
2. To educate the community about the absence of risk with casual contact with "HIV positive" individuals, and
3. To determine the extent of the disease by testing greater numbers of people.

The CDC has finally recommended what common sense dictates—routine, voluntary testing of all hospitalized patients. As reported in *AMA News* (Oct. 7, 1991), 63% to 65% of seropositive patients are unaware of their infection. The government said the recommendations are needed because studies have indicated the widespread extent of patients entering hospitals with undiagnosed HIV infection. Early intervention in this disease process may delay or prevent disease progression. Isn't that what we are supposed to do as physicians? How can we do it if 65% of patients are undiagnosed?

Testing should not be viewed simply as something to protect physicians or health care workers from infected patients, but as a tool to determine the spread or control of the disease and to effect early intervention for the benefit of the patient. If at some point in the future it is no longer necessary or appropriate, we will at least have good statistics with which to make that judgment.

We must begin:

1. Testing all patients admitted to acute care hospitals,
2. Annual testing of all physicians and health care workers with significant patient contact,
3. Premarital testing,
4. Develop plans for the care of, and guidelines for, the continued employment of HIV-positive health care workers and physicians,
5. Consider legislation to guarantee the continued insurability of HIV-positive individuals.

Ignoring this problem won't make it go away. We have an opportunity to be leaders, educators, humanitarians, and physicians in the truest sense of the word. □

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#### The Author

Roy L. Forsythe, MD, a specialist in plastic surgery, is a clinical associate professor in surgery at the University of Oklahoma College of Medicine in Oklahoma City.

### *Coleman heads OSMA-HMSS*

## Chairman reports on activities of Oklahoma delegates to AMA-HMSS

Oklahoma physicians attending the December 5-8 meeting of the American Medical Association Hospital Medical Staff Section (AMA-HMSS) and the hospitals they represented are as follows:

William O. Coleman, MD, Baptist Medical Center, Oklahoma City

Gordon D. Lantz, MD, St. John's Medical Center, Tulsa

James R. Leach, MD, St John's Medical Center, Tulsa

J. Michael Pontious, MD, St. Mary's Hospital, Enid

Bryce Poolaw, MD, USPHS Indian Hospital, Lawton

Clarence Robison, Jr., MD, Mercy Health Center, Oklahoma City

Michael J. Schwartz, MD, Deaconess Hospital, Oklahoma City

This is one of the best representations of Oklahoma physicians we have had and reflects an increasing

interest in hospital medical staff issues, both here in Oklahoma and over the United States.

The December meeting was the eighteenth AMA-HMSS Assembly. During this period of time, the AMA House of Delegates has adopted 229 HMSS resolutions, referred 74, and not adopted 13. Clearly the AMA-HMSS has played a significant role in representing the attitudes and beliefs of the practicing physician in the process of AMA policy making.

At this eighteenth meeting, 416 certified HMSS representatives took action on 58 resolutions and 18 reports.

The AMA-HMSS transmitted 14 resolutions to the AMA House of Delegates from this meeting and 8 resolutions from the June 1991 meeting. Eleven of these were adopted by the House of Delegates. Most of the other resolutions were either referred to the board or included with reports; none were not adopted.

One HMSS resolution was instrumental in devel-

*(continued on page 85)*

## HCFA administrator pays a visit to state politicians and physicians



Gail R. Wilensky, PhD, HCFA administrator (ctr) visited Oklahoma City and Tulsa in December. Among those greeting her were (l to r) Richard J. Boatsman, MD, Lawton, chairman of the OSMA Council on Governmental Activities; US Senator Don Nickles; and Donald L. Cooper, MD, Stillwater, member of the President's Council on Physical Fitness.

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5,425 cases so far

## Most health care workers with AIDS don't get the disease on the job

Health care workers consistently have comprised 5.0% or less of AIDS cases reported to the Centers for Disease Control (CDC) each year and, as such, are not overrepresented among persons with AIDS when compared with the proportion of the US labor force employed in health services (6.0%), according to a recent report. "As of June 30, 1990, there were 137,385 adults and adolescents older than 13 years with AIDS who had been reported to the [CDC] . . . 5,424 (4.8%) of whom were classified as health care workers," write Mary E. Chamberland, MD, MPH, of the Hospital Infections Program, National Center for Infectious Diseases, CDC, and colleagues.

Of the 5,425 cases, 5,120 (94.4%) were found to have non-occupational risk factors for HIV infection, like homosexual contact, blood transfusions, or intravenous drug use, the researchers found.

Follow-up information was collected on 303 of the 539 cases with undetermined risks; 237 were found to have non-occupational risk factors. For the other 66, no occupational or non-occupational risks were conclusively documented.

Of the 236 on whom follow-up information was not

collected, 187 were under investigation and 49 had either died, refused interview, or were not available.

"Three health care workers reported through AIDS surveillance developed AIDS following well-documented occupational exposure to HIV-infected blood," the authors write in the December 25 *Journal of the American Medical Association*.

"In addition to these three, the CDC is aware of at least 20 additional health care workers in the United States who have not developed AIDS but who are reported to have seroconverted to HIV after a documented percutaneous injury or mucous membrane or skin exposure to blood, and one laboratory worker who seroconverted following a mucocutaneous exposure to concentrated virus," they say.

"The increasing number of persons being treated for HIV-associated illnesses makes it likely that more health care workers will encounter persons infected with HIV," they write. "Recommendations made by the CDC to use universal precautions when caring for all patients and the Occupational Safety and Health Administration's [OSHA's] recently proposed standard . . . can help reduce this risk." □

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## HMSS Report (continued)

oping AMA policy which now calls for the ability to use the general consent form as adequate consent for HIV testing in the hospital.

At the Opening Session of the HMSS Assembly, Oklahoma's Sherry Strebel, president of the AMA Auxiliary, presented a well-received and exciting welcoming address.

The informational and educational sessions are an important part of each AMA-HMSS meeting. The two timely subjects were (1) PRO — new scope of work and UCDS and (2) RBRVS — its impact on hospital medical staff relations and what we can expect in 1992.

Those of you on the medical staffs of the hospitals represented at this AMA-HMSS meeting are encouraged to seek a report from your HMSS representative and to send your representative to the June 1992 meeting of the AMA-HMSS, along with your issues and concerns.

—William O. Coleman, MD  
Chairman, OSMA-HMSS

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## REACTION TIME

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### Reader agrees physician learns much during own hospitalization

*To The Editor:* As one who went through serious illness (lobar pneumonia) and operation (ruptured appendix) — back in the days before any antibiotics — I always felt the [Stephen Paget quotation, *JOURNAL*, Nov 1991, p 569] to be true.

I think I was a much more compassionate physician as a result. I am interested in more information about *Confessio Medici* and its author Stephen Paget. I would appreciate this information if it is available.

—James F. Hohl, MD  
Ada

*Regrettably we could provide little additional information to Dr Hohl. The filler was taken from a book of medical quotations that cites, at most, a title, author, and date. — Ed.*

## IN MEMORIAM

### 1991

Milton Louis Berg, MD	January 7
Clifford Wesley Moore, MD	January 7
Frank Eugene Darrow, MD	January 8
Forrest William Olson, MD	January 30
Charles Watson Robinson, Jr., MD	February 22
Clarence Pierce Taylor, Jr., MD	March 3
Linus A. Munding, MD	March 14
Robert Love Loftin, MD	March 15
William Orville Davis, MD	March 23
Malcom E. Phelps, MD	March 26
Henry Edward Barnes, MD	April 2
Alfred Burke Hinkle, MD	April 2
Hassell Eugene Groves, MD	April 3
Joe Marion Parker, MD	April 3
Henry Clinton Smith, MD	April 4
George Louis Kaiser, MD	April 10
Robert Phillip Messinger, MD	April 10
John Norman Penrod, MD	April 19
John Florence, MD	April 20
Clifford Alton Brown, MD	April 29
James Goree Moore, MD	April 29
Mark Duane Hopping, MD	May 1
William Alfred Cunningham, MD	May 13
Gilbert Wayne Tracy, MD	May 13
George Clifford Moore, MD	May 24
Daisy Gertrude Cotten, MD	May 26
Edward Woodrow Ellis, MD	May 28
Ronald I. Cramer, MD	June 16
Edward Tiffin Cook, Jr., MD	June 18
Arvin Craig Roberson, MD	July 15
John Berry Gilbert, MD	August 6
Frank Leo Bradley, MD	August 31
Rugie Reginald Coates, MD	September 15
James Byron Snow, MD	September 28
Howard Angus, MD	October 9
Jack Owen Alexander, MD	October 21
Roy Oliver Kelly, Jr., MD	October 22
Lowell Francis Thornton, MD	October 22
Lillian Marie Hoke, MD	October 25
Irwin Hubert Brown, MD	October 27
Harold Houston Jones, Jr., MD	October 27
Francis Ray First, Jr., MD	October 28
Robert W. Kahn, MD	October 30
Charles Hugh Wilson, MD	October 30
George Kellogg Stephens, MD	November 4
Weldon Keiller Haynie, MD	November 25
Samuel Richard Fryer, MD	November 30
William Thomas Snoddy, MD	December 3
Philip George Joseph, MD	December 20
Charles Patrick Kirkland, MD	December 24

### Up 92% with cimetidine

## Ulcer medications may increase blood alcohol concentrations

"Patients treated with ranitidine (Zantac) or cimetidine (Tagamet) should be warned of possible functional impairments after consumption of amounts of ethanol considered safe in the absence of such therapy," writes Carlo DiPadova, MD, from the Section of Liver Diseases and Nutrition and Alcohol Research and Treatment Center, Bronx Veterans Affairs Medical Center, New York, with colleagues.

The authors studied 20 healthy white males aged 24 to 46 years (mean age, 35 years). At baseline, the subjects were fed a standard breakfast followed in one hour by alcohol (0.3 grams per kilogram of body weight; equal to about 1.5 drinks).

Subjects were then treated for a week with one of three anti-ulcer medications, ranitidine (eight subjects, 300 milligrams per day), cimetidine (six subjects, 1,000 milligrams per day), or famotidine (Pepcid) (six subjects, 40 milligrams per day).

Relative to baseline measures, peak blood alcohol concentrations were 34% higher after ranitidine treatment and 92% higher after cimetidine, the researchers found. Blood alcohol concentration changes after famotidine treatment were not significant.

"[O]ur study revealed that ranitidine and cimetidine (but not famotidine) lead to substantial increases in blood alcohol levels after consumption of an amount of ethanol that corresponds to common social drinking," they write in the January 1 issue of the *Journal of the American Medical Association*. "The blood alcohol levels achieved have been clearly shown to impair tasks that require a high degree of attention and motor coordination."

The authors write: "Therefore, a warning may be appropriate when these drugs are prescribed, especially in social drinkers who may drive vehicles or operate other machinery that requires a high degree of attention and/or coordination." J

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Oklahoma State Department of Health

## CDC issues new guidelines for toxic childhood blood lead levels



Childhood lead poisoning is one of the most common pediatric health problems in the United States. Each year, three to four million children under 6 years of age have blood lead levels over 15 micrograms/deciliter of whole blood ( $\mu\text{g}/\text{dl}$ ), and an estimated 400,000 fetuses are exposed to lead at levels that can delay mental development. This entirely preventable cause of disease cuts across all socioeconomic boundaries, making lead poisoning one of the most serious childhood hazards today.

In October 1991, the Centers for Disease Control (CDC) set a new "threshold of concern" for childhood blood lead levels, due to recent research indicating that lead is toxic, particularly for children, at extremely low levels — 10 to 15  $\mu\text{g}/\text{dl}$ . The 1985 intervention level of 25  $\mu\text{g}/\text{dl}$  is, therefore, being revised downwards to 10  $\mu\text{g}/\text{dl}$ .

The single all-purpose definition of childhood lead poisoning has been replaced with a multilevel approach. According to the CDC, community prevention activities should be triggered by blood levels  $\geq 10 \mu\text{g}/\text{dl}$ . All children with blood levels  $\geq 15 \mu\text{g}/\text{dl}$  should receive individual case management, including nutritional and educational interventions and more frequent screening. Depending on the availability of resources, environmental investigation (including a home inspection) and remediation should be done for children with blood lead levels of 15 to 19  $\mu\text{g}/\text{dl}$ , if such levels persist. Medical evaluation and environmental investigation and remediation should be done for all children with blood lead levels  $\geq 20 \mu\text{g}/\text{dl}$ . Pharmacological treatment of lead poisoning also may be warranted. The highest priority should continue to be the children with the highest blood lead levels.

Since virtually all children are at risk for lead

(continued on next page)

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## Blood lead levels (continued)

poisoning, a phase of universal screening is recommended, except in communities where large numbers or percentages of children have been screened and found not to have lead poisoning. Because the erythrocyte protoporphyrin level is not sensitive enough to identify blood lead levels below about 25 µg/dl, the screening test of choice is now blood lead measurement. The full implementation of universal screening will require inexpensive and more convenient methods of blood lead measurement.

Deteriorating lead paint, dust, soil, and water are the main sources of lead exposure in the US. For children, ingestion is the usual route of exposure, because their natural exploratory behavior leads them to put things such as flaking paint in their mouths. Furthermore, children have a higher mineral turnover in bone and can absorb as much as 50% of the lead they ingest. Absorption increases with fasting, and with iron or calcium deficiency.

Lead poisoning, for the most part, is silent: most poisoned children have no symptoms. Lead's toxicity manifests itself principally in the red blood cells, the nervous system, and the kidneys. Anemia is the most serious hematological outcome of lead toxicity. Lead poisoning can be fatal.

Federal regulatory and other actions have resulted in substantial progress in reducing blood lead levels in the entire US population. In the last two decades, the virtual elimination of lead from gasoline has resulted in reductions in blood lead levels. Lead levels in food have also decreased since most manufacturers stopped using leaded solder and since atmospheric deposition of lead on food crops declined as a result of reductions of lead in gasoline. In 1978, the US Consumer Product Safety Commission banned the addition of lead to new residential paint. Nevertheless, important environmental pathways of lead remain; therefore, screening and medical treatment of poisoned children will remain critically important until all environmental sources most likely to poison children are eliminated. 

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## Doctors and Diseases in the Roman Empire.

By R. Jackson. Norman and London: University of Oklahoma Press, 1988. Pp 207, 50 illus. Price not given.

Ralph Jackson, curator of prehistoric and Romano-British antiquities at the British Museum, has written an entertaining, well-researched and comprehensive study of medicine in the Roman world. Beginning with the development of medicine in the Greek and Hellenistic worlds, the author proceeds to show the pervasive influence of Greek physicians and their theory of disease and health practices in the Roman empire. Individual chapters explore preventive medicine ("Fitness, food, and hygiene"), the art and pharmacopoeia of Roman medicine ("Physicians and their medicine"), obstetrics and gynecology ("Women's diseases, birth, and contraception"), trauma and military medicine ("The surgeon and the army"), Roman and provincial cult medicine ("Gods and their magic"), and chronic and terminal illness ("Dying and death").

Throughout the book the reader repeatedly is surprised by the contemporary quality of the medical concerns and practices of these Greek and Roman physicians. The black and white illustrations are well chosen and complement the text. The author is to be commended for his scholarly but clear and easily readable style, and *Doctors and Diseases in the Roman Empire* is highly recommended for the general reader as well as those specifically interested in the history of medicine.

—Samuel R. Oleinick, MD, PhD  
Oklahoma City

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## DEATHS

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### Weldon Keiller Haynie, MD 1907 - 1991

Longtime Durant surgeon Weldon K. Haynie, MD, died November 25, 1991. Dr Haynie was born in Aylesworth, Indian Territory, and moved to Durant in 1916. He earned his medical degree from the University of Oklahoma School of Medicine in 1933. After completing his postgraduate studies, he returned to Durant to enter practice with his father. He served as chairman of the Hospital Advisory Council to the state health commission, representing the OSMA, from 1946 to 1958.

*(continued)*

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## Deaths (continued)

### Harold Houston Jones, Jr., MD 1918 - 1991

Dr Harold H. Jones, Jr., longtime Ponca City physician, died October 27, 1991. He was born in Winfield, Kans, and graduated from the University of Kansas School of Medicine in 1943. During World War II he served with the 2nd Marine Division. Dr Jones established a private practice in internal medicine in Ponca City in 1954.

### Philip George Joseph, MD 1913 - 1991

OSMA Life Member Philip G. Joseph, MD, a 1940 graduate of the University of Oklahoma School of Medicine, died December 20, 1991. Dr Joseph was born in Scranton, Pa, and attended Bristow High School. He had a private general practice in Sapulpa from 1943 to his retirement in 1989.

### Charles Patrick Kirkland, MD 1932 - 1991

Charles P. Kirkland, MD, a native of Oklahoma City, died December 24, 1991. Dr Kirkland earned his medical degree from the University of Oklahoma School of Medicine in 1963. He practiced aerospace and occupational medicine with the US Air Force from 1967 to 1981 before relocating to Oklahoma City in 1981.

### William Thomas Snoddy, MD 1920 - 1991

William T. Snoddy, MD, a Life Member of the OSMA, died December 3, 1991. Dr Snoddy, a 1944 graduate of the University of Oklahoma School of Medicine, was a pathologist in Oklahoma City and an instructor of pathology at his alma mater. During World War II he served two years' active duty with the US Army, attaining the rank of captain. Dr Snoddy was born in Stratford, Okla. J

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## CLASSIFIEDS

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*(continued on page 91)*





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3. *Gastroesophageal reflux disease (GERD)*—for up to 12 weeks of treatment of endoscopically diagnosed esophagitis, including erosive and ulcerative esophagitis, and associated heartburn at a dosage of 150 mg b.i.d.

**Contraindication:** Known hypersensitivity to the drug. Because cross sensitivity in this class of compounds has been observed, H<sub>2</sub>-receptor antagonists, including Axid, should not be administered to patients with a history of hypersensitivity to other H<sub>2</sub>-receptor antagonists.

**Precautions:** General—1. Symptomatic response to nizatidine therapy does not preclude the presence of gastric malignancy.

2. Dosage should be reduced in patients with moderate to severe renal insufficiency.

3. In patients with normal renal function and uncomplicated hepatic dysfunction, the disposition of nizatidine is similar to that in normal subjects.

**Laboratory Tests**—False-positive tests for urobilinogen with Multistix<sup>®</sup> may occur during therapy.

**Drug Interactions**—No interactions have been observed with theophylline, chlorazepoxide, lorazepam, lidocaine, phenytoin, and warfarin. Axid does not inhibit the cytochrome P-450 enzyme system; therefore, drug interactions mediated by inhibition of hepatic metabolism are not expected to occur. In patients given very high doses (3,900 mg) of aspirin daily, increased serum salicylate levels were seen when nizatidine, 150 mg b.i.d., was administered concurrently.

**Carcinogenesis, Mutagenesis, Impairment of Fertility**—A 2-year oral carcinogenicity study in rats with doses as high as 500 mg/kg/day (about 80 times the recommended daily therapeutic dose) showed no evidence of a carcinogenic effect. There was a dose-related increase in the density of enterochromaffin-like (ECL) cells in the gastric oxyntic mucosa. In a 2-year study in mice, there was no evidence of a carcinogenic effect in male mice, although hyperplastic nodules of the liver were increased in the high-dose males as compared with placebo. Female mice given the high dose of Axid (2,000 mg/kg/day, about 330 times the human dose) showed marginally statistically significant increases in hepatic carcinoma and hepatic nodular hyperplasia with no numerical increase seen in any of the other dose groups. The rate of hepatic carcinoma in the high-dose animals was within the historical control limits seen for the strain of mice used. The female mice were given a dose larger than the maximum tolerated dose, as indicated by excessive (30%) weight decrement as compared with concurrent controls and evidence of mild liver injury (transaminase elevations). The occurrence of a marginal finding at high dose only in animals given an excessive and somewhat hepatotoxic dose, with no evidence of a carcinogenic effect in rats, male mice, and female mice (given up to 360 mg/kg/day, about 60 times the human dose), and a negative mutagenicity battery are not considered evidence of a carcinogenic potential for Axid.

Axid was not mutagenic in a battery of tests performed to evaluate its potential genetic toxicity, including bacterial mutation tests, unscheduled DNA synthesis, sister chromatid exchange, mouse lymphoma assay, chromosome aberration tests, and a micronucleus test.

In a 2-generation, perinatal and postnatal fertility study in rats, doses of nizatidine up to 650 mg/kg/day produced no adverse effects on the reproductive performance of parental animals or their progeny.

**Pregnancy—Teratogenic Effects—Pregnancy Category C**—Oral reproduction studies in rats at doses up to 300 times the human dose and in Dutch Belted rabbits at doses up to 55 times the human dose revealed no evidence of impaired fertility or teratogenic effect; but, at a dose equivalent to 300 times the human dose, treated rabbits had abortions, decreased number of live fetuses, and depressed fetal weights. On intravenous administration to pregnant New Zealand White rabbits, nizatidine at 20 mg/kg produced cardiac enlargement, coarctation of the aortic arch, and cutaneous edema in 1 fetus, and at 50 mg/kg, it produced ventricular anomaly, distended abdomen, spina bifida, hydrocephaly, and enlarged heart in 1 fetus. There are, however, no adequate and well-controlled studies in pregnant women. It is also not known whether nizatidine can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. Nizatidine should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

**Nursing Mothers**—Studies in lactating women have shown that 0.1% of an oral dose is secreted in human milk in proportion to plasma concentrations. Because of growth depression in pups reared by treated lactating rats, a decision should be made whether to discontinue nursing or the drug, taking into account the importance of the drug to the mother.

**Pediatric Use**—Safety and effectiveness in children have not been established.

**Use in Elderly Patients**—Healing rates in elderly patients were similar to those in younger age groups as were the rates of adverse events and laboratory test abnormalities. Age alone may not be an important factor in the disposition of nizatidine. Elderly patients may have reduced renal function.

**Adverse Reactions:** Worldwide, controlled clinical trials included over 6,000 patients given nizatidine in studies of varying durations. Placebo-controlled trials in the United States and Canada included over 2,600 patients given nizatidine and over 1,700 given placebo. Among the adverse events in these placebo-controlled trials, only anemia (0.2% vs 0%) and urticaria (0.5% vs 0.1%) were significantly more common in the nizatidine group. Of the adverse events that occurred at a frequency of 1% or more, there was no statistically significant difference between Axid and placebo in the incidence of any of these events (see package insert for complete information).

A variety of less common events were also reported; it was not possible to determine whether these were caused by nizatidine.

**Hepatic**—Hepatocellular injury (elevated liver enzyme tests or alkaline phosphatase) possibly or probably related to nizatidine occurred in some patients. In some cases, there was marked elevation (>500 IU/L) in SGOT or SGPT and, in a single instance, SGPT was >2,000 IU/L. The incidence of elevated liver enzymes overall and elevations of up to 3 times the upper limit of normal, however, did not significantly differ from that in placebo patients. All abnormalities were reversible after discontinuation of Axid. Since market introduction, hepatitis and jaundice have been reported. Rare cases of cholestatic or mixed hepatocellular and cholestatic injury with jaundice have been reported with reversal of the abnormalities after discontinuation of Axid.

**Cardiovascular**—In clinical pharmacology studies, short episodes of asymptomatic ventricular tachycardia occurred in 2 individuals administered Axid and in 3 untreated subjects.

**CNS**—Rare cases of reversible mental confusion have been reported.

**Endocrine**—Clinical pharmacology studies and controlled clinical trials showed no evidence of anti-androgenic activity due to nizatidine. Impotence and decreased libido were reported with similar frequency by patients on nizatidine and those on placebo. Gynecomastia has been reported rarely.

**Hematologic**—Anemia was reported significantly more frequently in nizatidine than in placebo-treated patients. Fatal thrombocytopenia was reported in a patient treated with nizatidine and another H<sub>2</sub>-receptor antagonist. This patient had previously experienced thrombocytopenia while taking other drugs. Rare cases of thrombocytopenic purpura have been reported.

**Integumentary**—Urticaria was reported significantly more frequently in nizatidine- than in placebo-treated patients. Rash and exfoliative dermatitis were also reported.

**Hypersensitivity**—As with other H<sub>2</sub>-receptor antagonists, rare cases of anaphylaxis following nizatidine administration have been reported. Rare episodes of hypersensitivity reactions (eg, bronchospasm, laryngeal edema, rash, and eosinophilia) have been reported.

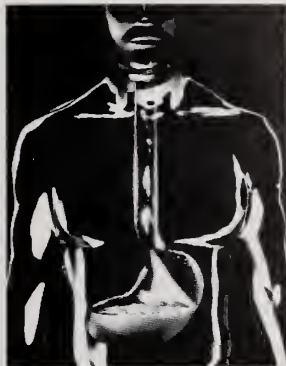
**Other**—Hyperuricemia unassociated with gout or nephrolithiasis was reported. Eosinophilia, fever, and nausea related to nizatidine have been reported.

**Overdosage:** Overdoses of Axid have been reported rarely. It overdosage occurs, activated charcoal, emesis, or lavage should be considered along with clinical monitoring and supportive therapy. The ability of hemodialysis to remove nizatidine from the body has not been conclusively demonstrated, however, due to its large volume of distribution, nizatidine is not expected to be efficiently removed from the body by this method.

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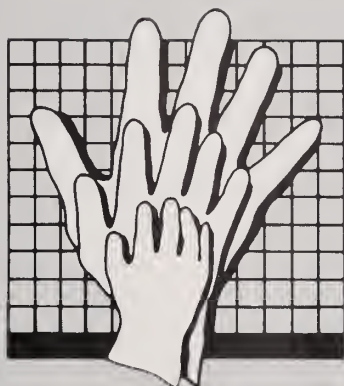


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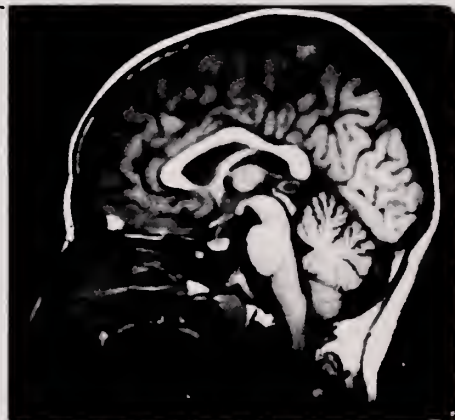


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### Style

All manuscripts should adhere to the style adopted by the American Medical Association as illustrated in *JAMA* and detailed in the AMA's *Manual of Style*. An abstract of 150 words or less should accompany each paper and should state (1) the exact question considered, (2) the key points of methodology and success of execution, (3) the key findings, and (4) the conclusion(s) directly supported by these findings. Footnotes, bibliographies, and legends for illustrations should be typewritten, double-spaced, on separate sheets. References are to be listed in the order of their appearance in the article.

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### Reprints

Authors will receive reprint order forms from the Transcript Press, 222 East Eufaula, Norman, Oklahoma 73069, prior to publication of their articles. Other requests for reprints must be made to the Transcript Press within 30 days after publication.

### News

Readers are encouraged to submit news items of interest to Oklahoma physicians. Where dates of meetings, etc, are important, please remember that each issue closes on the first day of the *preceding* month and reaches subscribers in the latter half of the month of publication.

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The American Medical Association Education and Research Foundation (AMA-ERF) was established over 40 years ago and has distributed over \$48 million in gifts to medical schools. Over half of the physicians practicing medicine today have received some form of assistance under the Medical School Assistance Fund. Auxiliaries use several methods of fund raising and most of you are familiar with the holiday sharing card used by several Oklahoma counties. Holiday greetings are sent to physicians and their spouses by making a contribution to AMA-ERF to a "shared card."

Other methods of fund raising also have been used as "project plus" ideas. An example through the Oklahoma State Auxiliary is called the Fun Fitness Form. It has several functions: (1) To educate physicians about AMA-ERF, (2) To raise monies for AMA-ERF, and (3) To educate and make physicians and their

spouses aware of how important it is to be concerned with their own health. By taking 5 minutes of your time to fill out the form and return it and a check to the state AMA-ERF chairman, you can help accomplish these goals.

All Oklahoma State Medical Association members and Oklahoma State Medical Association Auxiliary members received the form in January along with a brochure explaining what AMA-ERF is and a cover letter explaining how the Fitness Form works.

Remember, your gift is tax deductible and, you, the donor, choose the medical school and the particular area you wish to support. Please respond to this request. It is vital that we all work to ensure the quality of health care, research, and education for a better future for all of us.

— "K" Caldwell  
OSMAA AMA-ERF Chair, 1991-1992

■ **Frank G. Gatchell, MD, Oklahoma City,** was named president-elect of the International Mayo Clinic Alumni Association during a meeting in Rochester, Minn. Dr Gatchell retired recently from the Oklahoma City Clinic after 35 years of surgical practice.

■ **Upcoming seminars on the University of Oklahoma's Continuing Medical Education** schedule are as follows:

**March 7. "Occupational Medicine."** The program will be held at the Oklahoma City Marriott and is designed to provide practical knowledge in both the clinical and administrative areas of Occupational Medicine to primary care physicians for the purpose of enhancing their ability to provide these services.

**April 10-12. "Current Problems in Pediatric Therapy XVIII."** This course is designed to update pediatricians in the application of current thought regarding changing concepts of treatment. The program is designed to meet the needs of the practicing pediatrician and generalist who works with children. The informal setting at the Fountainhead Resort Hotel, Checotah, Okla, will contribute to a close association between faculty and registrants, giving ample opportunity for group discussions and individual consultations. The resort setting should provide an atmosphere of relaxation in which the learning processes are facilitated.

**April 15-16. "Radiofrequency Catheter Ablation of Arrhythmias."** This seminar is to be held at the Waterford Hotel in Oklahoma City and is a repeat of one held last November. It will focus on the practical use of radiofrequency for catheter ablation of cardiac arrhythmias. The course will discuss the effect of radiofrequency energy on biological tissue in general and review and detail techniques for ablating accessory atrioventricular pathways, AV nodal re-entrant tachycardia, ventricular tachycardia, and AV conduction. The symposium is intended to be an advanced "how to" course for electrophysicists who are interested in applying radiofrequency catheter ablation techniques.

**For registration information** on any of these courses, write to Magdalen De Bault, Associate Director, Continuing Medical Education, University of Oklahoma College of Medicine, Post Office Box 26901, 3SP511, Oklahoma City, OK 73190.

■ **James H. Little, MD, head of the Ophthalmology Department** at South Community Hospital in

Oklahoma City, has been chosen by fellow physicians to be included in the forthcoming publication *The Best Doctors in America*. Listings in the directory, published by Woodward/White, Inc., are free of charge and cannot be purchased. A total of 3,840 physicians from virtually all specialties are listed; they are selected through a nationwide poll of leading physicians. In addition to his duties at South Community, Dr Little serves as associate clinical professor of ophthalmology at the University of Oklahoma College of Medicine and is in private practice at the Southwest Eye Institute.

■ **A December 1991 letter from OSMA President Billy Dale Dotter, MD,** and OSMA Auxiliary President Susan Paddock reminds state physicians that their donations are needed to support the Physician Recovery Foundation. The foundation provides assistance to physicians in the OSMA Physician Recovery Program and their families, in meeting basic financial needs during a difficult time. Currently there are over 250 physicians in full recovery and the program's recovery rate exceeds 90%. The letter concludes, "In the House of Medicine, as elsewhere, charity begins at home. We hope you will consider adding the OSMA Physician Recovery Foundation to your list of charities."

■ **Regulations in the recently released *Occupational Exposure to Bloodborne Pathogens*** become effective March 5, 1992. The publication, issued by the Occupational Safety and Health Administration (OSHA), contains protective requirements for employees exposed to blood in their routine work. Exposure control plans must be completed within 60 days of the effective date, with initial information and training to begin within 90 days and various other measures to be carried out within 120 days.

The regulations incorporate the universal precautions developed by the Centers for Disease Control (CDC) and cover all employees who could be "reasonably anticipated" as a result of performing their jobs to come in contact with blood and other potentially infectious materials. Physician offices, hospitals, nursing homes, and other ambulatory health care facilities will be subject to the requirements. Violations could result in fines of up to \$70,000 per incident. Member physicians are to receive compliance information from the AMA early this year. □



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**Warnings:** Verapamil should be avoided in patients with severe LV dysfunction (eg, ejection fraction < 30%) or moderate to severe symptoms of cardiac failure and in patients with any degree of ventricular dysfunction if they are receiving a beta-blocker. Control milder heart failure with optimum digitalization and/or diuretics before Calan SR is used. Verapamil may occasionally produce hypotension. Elevations of liver enzymes have been reported. Several cases have been demonstrated to be produced by verapamil. Periodic monitoring of liver function in patients on verapamil is prudent. Some patients with paroxysmal and/or chronic atrial flutter/fibrillation and an accessory AV pathway (eg, WPW or LGL syndromes) have developed an increased antegrade conduction across the accessory pathway bypassing the AV node, producing a very rapid ventricular response or ventricular fibrillation after receiving I.V. verapamil (or digitalis). Because of this risk, oral verapamil is contraindicated in such patients. AV block may occur (2nd- and 3rd-degree, 0.8%). Development of marked 1st-degree block or progression to 2nd- or 3rd-degree block requires reduction in dosage or, rarely, discontinuation and institution of appropriate therapy. Sinus bradycardia, 2nd-degree AV block, sinus arrest, pulmonary edema and/or severe hypotension were seen in some critically ill patients with hypertrophic cardiomyopathy who were treated with verapamil.

**Precautions:** Verapamil should be given cautiously to patients with impaired hepatic function (in severe dysfunction use about 30% of the normal dose) or impaired renal function, and patients should be monitored for abnormal prolongation of the PR interval or other signs of overdosage. Verapamil may decrease neuromuscular transmission in patients with Duchenne's muscular dystrophy and may prolong recovery from the neuromuscular blocking agent vecuronium. It may be necessary to decrease verapamil dosage in patients with attenuated neuromuscular transmission. Combined therapy with beta-adrenergic blockers and verapamil may result in additive negative effects on heart rate, atrioventricular conduction and/or cardiac contractility; there have been reports of excessive bradycardia and AV block, including complete heart block. The risks of such combined therapy may outweigh the benefits. The combination should be used only with caution and close monitoring. Decreased metoprolol and propranolol clearance may occur when either drug is administered concomitantly with verapamil. A variable effect has been seen with combined use of atenolol. Chronic verapamil treatment can increase serum digoxin levels by 50% to 75% during the first week of therapy, which can result in digitalis toxicity. In patients with hepatic cirrhosis, verapamil may reduce total body clearance and extrarenal clearance of digoxin. The digoxin dose should be reduced when verapamil is given, and the patient carefully monitored. Verapamil will usually have an additive effect in patients receiving blood-pressure-lowering agents. Disopyramide should not be given within 48 hours before or 24 hours after verapamil administration. Concomitant use of flecainide and verapamil may have additive effects on myocardial contractility, AV conduction, and repolarization. Combined verapamil and quinidine therapy in patients with hypertrophic cardiomyopathy should be avoided, since significant hypotension may result. Concomitant use of lithium and verapamil may result in a lowering of serum lithium levels or increased sensitivity to lithium. Patients receiving both drugs must be monitored carefully. Verapamil may increase carbamazepine concentrations during combined use. Rifampin may reduce verapamil bioavailability. Phenobarbital may increase verapamil clearance. Verapamil may increase serum levels of cyclosporin. Verapamil may inhibit the clearance and increase the plasma levels of theophylline. Concomitant use of inhalation anesthetics and calcium antagonists needs careful titration to avoid excessive cardiovascular depression. Verapamil may potentiate the activity of neuromuscular blocking agents (curare-like and depolarizing); dosage reduction may be required. There was no evidence of a carcinogenic potential of verapamil administered to rats for 2 years. A study in rats did not suggest a tumorigenic potential, and verapamil was not mutagenic in the Ames test. Pregnancy Category C. There are no adequate and well-controlled studies in pregnant women. This drug should be used during pregnancy, labor, and delivery only if clearly needed. Verapamil is excreted in breast milk; therefore, nursing should be discontinued during verapamil use.

**Adverse Reactions:** Constipation (7.3%), dizziness (3.3%), nausea (2.7%), hypotension (2.5%), headache (2.2%), edema (1.9%), CHF, pulmonary edema (1.8%), fatigue (1.7%), dyspnea (1.4%), bradycardia: HR < 50/min (1.4%), AV block: total 1°, 2°, 3° (1.2%), 2° and 3° (0.8%), rash (1.2%), flushing (0.6%), elevated liver enzymes, reversible non-obstructive paralytic ileus. The following reactions, reported in 1.0% or less of patients, occurred under conditions where a causal relationship is uncertain: angina pectoris, atrioventricular dissociation, chest pain, claudication, myocardial infarction, palpitations, purpura (vasculitis), syncope, diarrhea, dry mouth, gastrointestinal distress, gingival hyperplasia, ecchymosis or bruising, cerebrovascular accident, confusion, equilibrium disorders, insomnia, muscle cramps, paresthesia, psychotic symptoms, shakiness, somnolence, arthralgia and rash, exanthema, hair loss, hyperkeratosis, macules, sweating, urticaria, Stevens-Johnson syndrome, erythema multiforme, blurred vision, gynecomastia, galactorrhea/hyperprolactinemia, increased urination, spotty menstruation, impotence.

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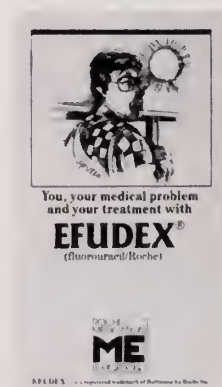
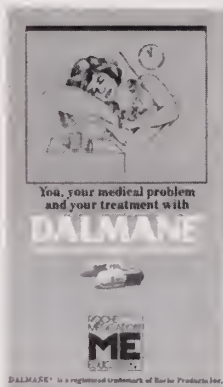
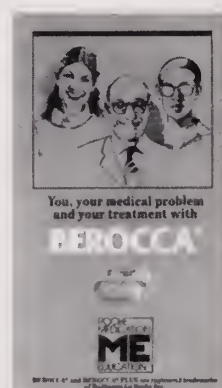
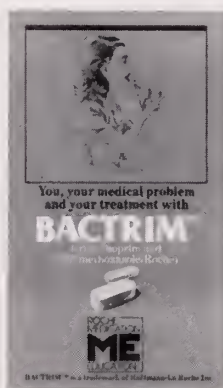
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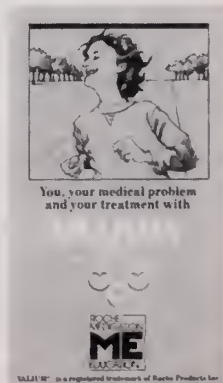
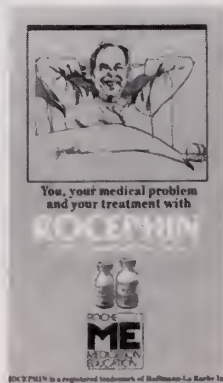
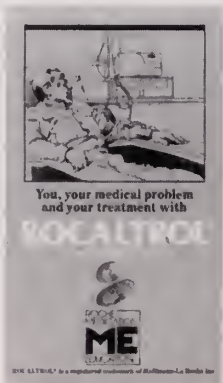
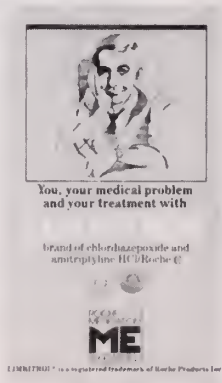
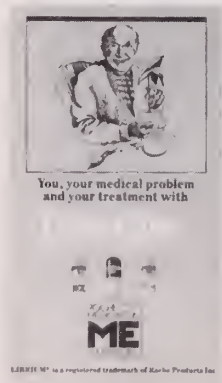


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# JOURNAL

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**ON THE COVER**



Redbud, the official state tree of Oklahoma, brightens the landscape each spring.

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**Indications and Usage:** 1. *Active duodenal ulcer*—for up to 8 weeks of treatment at a dosage of 300 mg h.s. or 150 mg b.i.d. Most patients heal within 4 weeks. 2. *Maintenance therapy*—for healed duodenal ulcer patients at a dosage of 150 mg h.s. at bedtime. The consequences of therapy with Axid for longer than 1 year are not known.

3. *Gastroesophageal reflux disease (GERD)*—for up to 12 weeks of treatment of endoscopically diagnosed esophagitis, including erosive and ulcerative esophagitis, and associated heartburn at a dosage of 150 mg b.i.d.

**Contraindication:** Known hypersensitivity to the drug. Because cross sensitivity in this class of compounds has been observed, H<sub>2</sub>-receptor antagonists, including Axid, should not be administered to patients with a history of hypersensitivity to other H<sub>2</sub>-receptor antagonists.

**Precautions:** General—1. Symptomatic response to nizatidine therapy does not preclude the presence of gastric malignancy.

2. Dosage should be reduced in patients with moderate to severe renal insufficiency.

3. In patients with normal renal function and uncomplicated hepatic dysfunction, the disposition of nizatidine is similar to that in normal subjects.

**Laboratory Tests**—False-positive tests for urobilinogen with Multistix® may occur during therapy.

**Drug Interactions**—No interactions have been observed with theophylline, chlorazepoxide, lorazepam, lidocaine, phenytoin, and warfarin. Axid does not inhibit the cytochrome P-450 enzyme system; therefore, drug interactions mediated by inhibition of hepatic metabolism are not expected to occur. In patients given very high doses (3,900 mg) of aspirin daily, increased serum salicylate levels were seen when nizatidine, 150 mg b.i.d., was administered concurrently.

**Carcinogenesis, Mutagenesis, Impairment of Fertility**—A 2-year oral carcinogenicity study in rats with doses as high as 500 mg/kg/day (about 80 times the recommended daily therapeutic dose) showed no evidence of a carcinogenic effect. There was a dose-related increase in the density of enterochromaffin-like (ECL) cells in the gastric oxyntic mucosa. In a 2-year study in mice, there was no evidence of a carcinogenic effect in male mice, although hyperplastic nodules of the liver were increased in the high-dose males as compared with placebo. Female mice given the high dose of Axid (2,000 mg/kg/day, about 330 times the human dose) showed marginally statistically significant increases in hepatic carcinoma and hepatic nodular hyperplasia with no numerical increase seen in any of the other dose groups. The rate of hepatic carcinoma in the high-dose animals was within the historical control limits seen for the strain of mice used. The female mice were given a dose larger than the maximum tolerated dose, as indicated by excessive (30%) weight decrement as compared with concurrent controls and evidence of mild liver injury (transaminase elevations). The occurrence of a marginal finding at high dose only in animals given an excessive and somewhat hepatotoxic dose, with no evidence of a carcinogenic effect in rats, male mice, and female mice (given up to 360 mg/kg/day, about 60 times the human dose), and a negative mutagenicity battery are not considered evidence of a carcinogenic potential for Axid.

Axid was not mutagenic in a battery of tests performed to evaluate its potential genetic toxicity, including bacterial mutation tests, unscheduled DNA synthesis, sister chromatid exchange, mouse lymphoma assay, chromosome aberration tests, and a micronucleus test.

In a 2-generation, perinatal and postnatal fertility study in rats, doses of nizatidine up to 650 mg/kg/day produced no adverse effects on the reproductive performance of parental animals or their progeny.

**Pregnancy—Teratogenic Effects—Pregnancy Category C**—Oral reproduction studies in rats at doses up to 300 times the human dose and in Dutch Belted rabbits at doses up to 55 times the human dose revealed no evidence of impaired fertility or teratogenic effect, but, at a dose equivalent to 300 times the human dose, treated rabbits had abortions, decreased number of live fetuses, and depressed fetal weights. On intravenous administration to pregnant New Zealand White rabbits, nizatidine at 20 mg/kg produced cardiac enlargement, coarctation of the aortic arch, and cutaneous edema in 1 fetus, and at 50 mg/kg, it produced ventricular anomaly, distended abdomen, spina bifida, hydrocephaly, and enlarged heart in 1 fetus. There are, however, no adequate and well-controlled studies in pregnant women. It is also not known whether nizatidine can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. Nizatidine should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

**Nursing Mothers**—Studies in lactating women have shown that 0.1% of an oral dose is secreted in human milk in proportion to plasma concentrations. Because of growth depression in pups reared by treated lactating rats, a decision should be made whether to discontinue nursing or the drug, taking into account the importance of the drug to the mother.

**Pediatric Use**—Safety and effectiveness in children have not been established.

**Use in Elderly Patients**—Healing rates in elderly patients were similar to those in younger age groups as were the rates of adverse events and laboratory test abnormalities. Age alone may not be an important factor in the disposition of nizatidine. Elderly patients may have reduced renal function.

**Adverse Reactions:** Worldwide, controlled clinical trials included over 6,000 patients given nizatidine in studies of varying durations. Placebo-controlled trials in the United States and Canada included over 2,600 patients given nizatidine and over 1,700 given placebo. Among the adverse events in these placebo-controlled trials, only anemia (0.2% vs 0%) and urticaria (0.5% vs 0.1%) were significantly more common in the nizatidine group. Of the adverse events that occurred at a frequency of 1% or more, there was no statistically significant difference between Axid and placebo in the incidence of any of these events (see package insert for complete information).

A variety of less common events were also reported; it was not possible to determine whether these were caused by nizatidine.

**Hepatic**—Hepatocellular injury (elevated liver enzyme tests or alkaline phosphatase) possibly or probably related to nizatidine occurred in some patients. In some cases, there was marked elevation (>500 IU/L) in SGOT or SGPT, and in a single instance, SGPT was >2,000 IU/L. The incidence of elevated liver enzymes overall and elevations of up to 3 times the upper limit of normal, however, did not significantly differ from that in placebo patients. All abnormalities were reversible after discontinuation of Axid. Since market introduction, hepatitis and jaundice have been reported. Rare cases of cholestatic or mixed hepatocellular and cholestatic injury with jaundice have been reported with reversal of the abnormalities after discontinuation of Axid.

**Cardiovascular**—In clinical pharmacology studies, short episodes of asymptomatic ventricular tachycardia occurred in 2 individuals administered Axid and in 3 untreated subjects.

**CNS**—Rare cases of reversible mental confusion have been reported.

**Endocrine**—Clinical pharmacology studies and controlled clinical trials showed no evidence of anti-androgenic activity due to nizatidine. Impotence and decreased libido were reported with similar frequency by patients on nizatidine and those on placebo. Gynecomastia has been reported rarely.

**Hematologic**—Anemia was reported significantly more frequently in nizatidine than in placebo-treated patients. Fatal thrombocytopenia was reported in a patient treated with nizatidine and another H<sub>2</sub>-receptor antagonist. This patient had previously experienced thrombocytopenia while taking other drugs. Rare cases of thrombocytopenic purpura have been reported.

**Integumental**—Urticaria was reported significantly more frequently in nizatidine- than in placebo-treated patients. Rash and exfoliative dermatitis were also reported.

**Hypersensitivity**—As with other H<sub>2</sub>-receptor antagonists, rare cases of anaphylaxis following nizatidine administration have been reported. Rare episodes of hypersensitivity reactions (eg, bronchospasm, laryngeal edema, rash, and eosinophilia) have been reported.

**Other**—Hyperuricemia unassociated with gout or nephrolithiasis was reported. Eosinophilia, fever, and nausea related to nizatidine have been reported.

**Overdosage:** Overdoses of Axid have been reported rarely. If overdosage occurs, activated charcoal, emesis, or lavage should be considered along with clinical monitoring and supportive therapy. The ability of hemodialysis to remove nizatidine from the body has not been conclusively demonstrated; however, due to its large volume of distribution, nizatidine is not expected to be efficiently removed from the body by this method. PV 2093 AMP [101591]

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**Action:** Yohimbine blocks presynaptic alpha-2 adrenergic receptors. Its action on peripheral blood vessels resembles that of reserpine, though it is weaker and of short duration. Yohimbine's peripheral autonomic nervous system effect is to increase parasympathetic (cholinergic) and decrease sympathetic (adrenergic) activity. It is to be noted that in male sexual performance, erection is linked to cholinergic activity and to alpha-2 adrenergic blockade which may theoretically result in increased penile inflow, decreased penile outflow or both.

Yohimbine exerts a stimulating action on the mood and may increase anxiety. Such actions have not been adequately studied or related to dosage although they appear to require high doses of the drug. Yohimbine has a mild anti-diuretic action, probably via stimulation of hypothalamic centers and release of posterior pituitary hormone.

Reportedly, Yohimbine exerts no significant influence on cardiac stimulation and other effects mediated by B-adrenergic receptors, its effect on blood pressure, if any, would be to lower it; however no adequate studies are at hand to quantitate this effect in terms of Yohimbine dosage.

**Indications:** Yocon® is indicated as a sympatholytic and mydriatic. It may have activity as an aphrodisiac.

**Contraindications:** Renal diseases, and patient's sensitive to the drug. In view of the limited and inadequate information at hand, no precise tabulation can be offered of additional contraindications.

**Warning:** Generally, this drug is not proposed for use in females and certainly must not be used during pregnancy. Neither is this drug proposed for use in pediatric, geriatric or cardio-renal patients with gastric or duodenal ulcer history. Nor should it be used in conjunction with mood-modifying drugs such as antidepressants, or in psychiatric patients in general.

**Adverse Reactions:** Yohimbine readily penetrates the (CNS) and produces a complex pattern of responses in lower doses than required to produce peripheral a-adrenergic blockade. These include, anti-diuresis, a general picture of central excitation including elevation of blood pressure and heart rate, increased motor activity, irritability and tremor. Sweating, nausea and vomiting are common after parenteral administration of the drug.<sup>1,2</sup> Also dizziness, headache, skin flushing reported when used orally.<sup>1,3</sup>

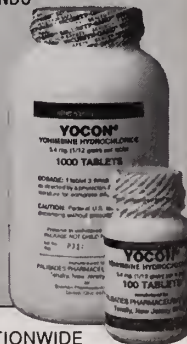
**Dosage and Administration:** Experimental dosage reported in treatment of erectile impotence.<sup>1,3,4</sup> 1 tablet (5.4 mg) 3 times a day, to adult males taken orally. Occasional side effects reported with this dosage are nausea, dizziness or nervousness. In the event of side effects dosage to be reduced to 1/2 tablet 3 times a day, followed by gradual increases to 1 tablet 3 times a day. Reported therapy not more than 10 weeks.<sup>3</sup>

**How Supplied:** Oral tablets of Yocon® 1/12 gr. 5.4 mg in bottles of 100's NDC 53159-001-01 and 1000's NDC 53159-001-10.

### References:

1. A. Morales et al., New England Journal of Medicine: 1221, November 12, 1981.
2. Goodman, Gilman — The Pharmacological basis of Therapeutics 6th ed., p. 176-188. McMillan December Rev. 1/85.
3. Weekly Urological Clinical Letter, 27:2, July 4, 1983.
4. A. Morales et al., The Journal of Urology 128: 45-47, 1982.

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## **Rescue the Perishing!**

The medical care of the terminally ill has become a bone of contention, as scientific advances have changed society's perception of the dying process. In the United States, and especially here in Oklahoma, there are new legal quandaries in the perceived duties of the physician. Those patients with various mixtures of physical and mental disabilities who are approaching their terminal days are often difficult to hydrate, nourish, and maintain.

But there is a natural life cycle, and the human reaction to another's death is partly determined by the stage of life. The death of a baby is a great tragedy, as a baby loses all before experiencing life. The death of a functional adult is also a tragedy, as dependents often suffer and useful accomplishments are untimely ended. The mature, self-sufficient adult's death may be more acceptable since the life cycle is nearly over, the life's work "completed," and dependents are less affected. Sometimes, the death of an elderly person may be viewed with relief; they are again dependent and "accomplish" little.

Oddly, our society gives a special dispensation for the ancient one whose personal assets pay for the terminal care costs without burdening family members or the taxpayer. Then, dependency and "usefulness" become irrelevant.

Our American society statistically spends more on the medical care of the terminally ill than was spent on all the previous medical care. Currently, this huge dollar amount is principally paid by the US taxpayer through the Medicare program. This fiscal muddle raises an incisive question for our present political system: should the taxpayer be forced to pay for the terminal medical care in order that the deceased's estate shall pass intact to the heirs? Or should the

terminal medical expenses come from the deceased's estate before it is distributed? In a democratic society, what are personal obligations and what are government obligations? The Medicare program includes everyone, both those who can and those who cannot fund the current fashions in treatment of the dying. Should the young taxpayer be forced to pay for the terminal care of the wealthy elderly citizen? How much does this cost shifting mechanism weaken our society?

We all arrive into this world naked, squalling, and flat broke, and there is a general agreement that we can't take money with us into the next world when we die. Should the young and struggling taxpayer be taxed in order that the elderly's heirs can inherit? Or is the use of tax money to buy terminal care for prosperous citizens a corruption of the government power to tax?

There is an old traditional hymn that urges: "Rescue the perishing! Care for the dying." Nowadays, the word "perishing" for an untimely or violent death is seldom used, but the admonishment of the ancient hymn remains clearly valid. As a society we should do what we can to succor the perishing, but we may and can simply take care of those citizens whose life cycle is nearly completed.

Our society should develop longitudinal lifetime medical insurance for our citizens so that the assets of the productive years will be used for the medical care of the declining years of each individual. Then our oldsters would not require help from the US government — our friends and neighbors.

*Ray V. McIntyre, M.D.*



## Family Medicine Building

The time is ripe for the dedication of capital improvement monies for the construction of the Family Practice Clinic building on campus at the OU Health Sciences Center.

Ten years of plans and promises are hopefully coming together. The demand for primary care physicians continues to increase across the nation and particularly in our state with its high rural population.

Compounding the problem in Oklahoma is the ever increasing number of graduates of family practice programs that are hired by tertiary metropolitan hospitals and HMOs at starting salaries that cannot be matched by rural hospitals or cities seeking family physicians.

It is indeed a paradox that only of late have the larger hospitals become supportive of the need for more primary care physicians. They need them to staff satellite clinics and as gatekeepers. That's okay. We will take all the support we can get from any sector and let the graduates make their own choices upon completion of their training.

Building the structure is of prime importance and has been endorsed by the Regents, President Van Horn, Provost Rich, Dean Brandt, OAFP, and OSMA. We have heard bold and vigorous statements from all the above within the past two months. Much stronger and more positive than the "reaffirmations of goals" reported annually for the past ten years.

Chancellor Hans Brisch put it succinctly — "We have talked about it enough. Let's roll up our sleeves and get it done." I like his style!



Can a family practice program ever flourish under the auspices of a university teaching hospital? Of course it can, and should (if at all possible). Many excellent programs across the nation are recognized for both research *and* primary care. The two are *not* incompatible.

As the crises in primary care, access to health care, and physician maldistribution become more acute, my hunch is that the solutions proposed will become more and more divisive. Politicians projecting perpetual optimism that only *their* programs can solve such complex problems will lead to successive edicts from above. The truth, of course, is that we do not now have enough primary care physicians to cover all bases. Other options will be proposed, such as rural clinics staffed by nurse practitioners and physician assistants under remote supervision, etc.

**Option I:** The best option, as I see it, is a dedicated effort to complete the original program and enhance the curriculum with more emphasis on emergency medicine, trauma, obstetrics, and pediatrics. A young physician confident in all these areas is much more likely to opt for, and be happy with, a non-urban practice.

**Option II:** If, after a fair trial, such clinicians can *not* be developed under the OUHSC umbrella, then we should abandon that program and swing our support to other hospitals considering development of family practice residency programs. We cannot delay our choice much longer or planners, outside of medicine, will choose for us.

A handwritten signature in cursive script, appearing to read "B. H. Satterfield".



# Donor Organ Availability

John S. Chaffin, MD; D.K.C. Cooper, MD, PhD; Nazih Zuhdi, MD

As the results of organ transplantation show steady improvement, we have seen a marked increase in the number of potential organ recipients. During this time however, the number of donor organs becoming available has remained little changed. The reasons for this phenomenon and some potential solutions for improving the supply of donor organs are reviewed.

Organ donation is a process that begins with a need. The need is a patient suffering from failure of an essential organ. To satisfy that need, organ procurement agencies (OPAs) have developed mechanisms for identification, referral, and equitable distribution of organs that are made available. Unfortunately, most OPAs are still haunted, not by lack of money or surgical skills, but rather by the lack of suitable donor referrals.<sup>1</sup>

In today's climate of ever-expanding demand for organs, the mounting pressure to find viable organs is felt by all transplant units.

The National Transplant Study in the USA found that 14,000 to 15,000 people a year could benefit from heart transplantation; the recent relaxation of some of the criteria for recipients makes the number even greater.<sup>2</sup> An estimated 17,000 to 26,000 persons annually are declared brain-dead while on respirators, making them potential donors.<sup>3</sup> It is further estimated that 12,000 to 14,000 persons in this group would qualify medically as heart donor. Evidence

from kidney donation suggests that only 20% to 40% of this medically qualified group will actually become donors,<sup>4</sup> this number being far short of the 14,000 to 15,000 needed.

The chronic shortage of hearts for transplantation raises a number of issues that must be considered if we are to meet the growing demands of our patients.

## Reasons for Inadequacy of Donor Organ Supply

Gallup polls have determined that more than 80% of Americans state that they are willing to donate their organs and tissue for transplantation after death. Only about 17%, however, carry organ donor cards.<sup>5</sup> Currently, in the US, 30% of patients approved for cardiac transplantation die awaiting a donor organ. If 80% of Americans actually donated post-mortem organs for transplantation, more than enough would be available to supply current needs. Personal experience demonstrates that grieving families frequently welcome an opportunity to consider organ and tissue donation. The knowledge that other lives have been enhanced through the gift of organs is generally a strong solace for a family struggling to accept what they feel is a "meaningless" death. Statistically, fewer than 30% of those asked turn down the request for donation. The majority do not donate either because they were not approached, or because the personnel involved in the care of the patient were not aware of the suitability of the patient as a donor of organs. Well-coordinated public and professional education programs must continue to be developed.<sup>6</sup>

In 1968, the National Conference of Commissioners on Uniform Law and the American Bar As-

Direct correspondence to John S. Chaffin, MD, Oklahoma Transplantation Institute, Baptist Medical Center, 3300 Northwest Expressway, Oklahoma City, OK 73112.

sociation drafted the "Uniform Anatomical Gift Act," an attempt to provide the states within the US with a model for recognizing and formalizing methods through which individuals or families could make a gift of their organs or those of a relative. The act authorizes an individual 18 years of age or older, in the presence of two witnesses, to record his or her wishes regarding organ donation by will, donor card, or other written document, or orally in the presence of two witnesses, and authorizes the next of kin to consent to organ donation in the absence of the deceased's known objection. Space has been made available on the back of all drivers' licenses for recording the wishes of potential organ donors. Less than 10% of those eligible, however, actually mark their license.<sup>7</sup>

While it may not seem to be healthy or "natural" to anticipate one's own death or the death of a family member, such anticipation is not infrequent—we buy life insurance to provide benefits upon death; we prepare wills and trusts, and even buy cemetery plots in anticipation of death. In a similar manner, we must convince the members of the public to accept consent for organ donation as a logical preparatory step for their own demise.

Trust in the system is imperative, and lack of knowledge or understanding of organ donation procedures may instill fear or lack of trust (Table 1). Common sources of concern or mistrust include (1) lack of awareness of religious or moral propriety of invasion of the body or removal of parts for transplantation, (2) concern over the care of or proper respect for a body after donation, (3) concern that organs may be sold for profit of others, (4) superstition that talk of death or signing a donor card might accelerate their own death, and finally, (5) fear that organs might be removed from a person before death has occurred.<sup>8</sup> It is the responsibility of the transplant community to alleviate such fears and concerns through proper education. Historically, human beings respond with altruism when called upon to meet needs they understand and trust.

### Possible Methods of Increasing the Supply

There is an essential and primary need to continue a program of making both the public and the medical profession aware of the requirements of the patient awaiting transplantation. There are, however, several other ways in which the number of organs made available for transplantation could be significantly increased. Several involve possible changes in the laws concerning donation, and some of these will be

**Table 1. Questions Frequently Asked by the Family of a Potential Organ Donor**

Is there anything more that can be done?
Is he/she really dead?
Why does his/her heart still beat?
What organs or tissue will be used?
Who will remove the organs?
Who will receive the organs?
What will surgery be like?
How long will surgery take?
Will an autopsy be necessary?
Will the body be picked up by the funeral home?
Will the Medical Examiner be involved?
When can a funeral be held?
How will he/she look, after donation?
Who will pay the cost of organ donation?
Will anyone know we donated?
Will the media be involved?
Will we be able to make contact with the recipient?
When will we know if the organs were used?

discussed below. Furthermore, attention must be paid to the efficient use of such organs; unnecessary waste must be eliminated whenever possible.

**Alternatives to the "Family Consent" Requirement.** The present system of family consent for donation from brain-dead, heart-beating cadavers does not result in donation of all of the organs that are medically acceptable for transplantation. It is likely that more hearts could be retrieved if the need for family consent were modified or even eliminated. The argument in favor of doing this rests on the assumption that the harm that might be inflicted on (potential donors') non-consenting families is of less concern than that suffered by transplant candidates (and their families) who die from lack of suitable donor organs.

An alternative to family consent is "*presumed consent*," in which the consent of the family (or deceased) to donate is assumed unless they come forward and object. Some states currently have such laws covering the donation of corneas, and have seen a significant increase in the supply of corneal tissue.<sup>3</sup>

A more radical option would be the *elimination of consent* altogether, allowing the routine salvage of organs in every suitable brain-dead patient. Routine salvage would treat the deceased's organs or body as a community resource, and permit organs and tissue to be excised as needed. This may not be as radical a solution as it seems. The military "draft," or the conscription of young citizens into the armed forces, which is or has been legal in many countries, demon-



strates the community's willingness to accept jurisdiction of the live body when an important public purpose—the safety of the community—is at stake. Saving the lives of persons with end-stage organ failure is arguably as important as saving lives by raising armies, and may justify overriding the family's traditional control of the deceased's remains.<sup>9</sup>

***Relaxation of Brain Death Requirements.*** Some persons have proposed relaxing the requirement for brain death, which at present includes death of the brain stem, to permit organ retrieval from persons who lack cortical function only.<sup>10</sup> Such a redefinition of death would allow organ retrieval from irreversibly comatose and anencephalic patients. While such a change is not likely to significantly increase the supply of adult hearts, it may prove to be an important factor in the expansion of pediatric heart transplantation.

***"Routine Inquiry" or "Required Request Policies."*** Perhaps our best immediate hope for increasing the organ supply lies with implementing "routine inquiry" or "required request" policies. Such policies maintain respect for family wishes, and address the main flaw in the present organ procurement system, namely, the reluctance of some physicians to discuss brain death and organ donation with grieving families. This reluctance to broach the subject of organ donation is due to many factors, including lack of knowledge about transplantation, misunderstanding of brain death, fears about legal liability, fears that discussions will be upsetting to families, and a general distaste for the subject. As a result, many families are not asked to donate, and potential donors are lost.

Routine request laws have been recommended by many organizations, including the Federal Task Force on Organ Donation, and have been enacted into law in most states in the US, including Oklahoma. These laws place a duty on hospitals to identify all potential donors and counsel the next of kin on the possibility of organ donation.

***The Sale and Purchase of Organs.*** A "market" in organs has been proposed as a way to increase the supply. In the US, however, it is now a federal crime, punishable by five years in prison, to "acquire, receive, or otherwise transfer any human organ for valuable consideration."<sup>11</sup> Opponents of the sale of organs point out the adverse effect it would have on voluntary organ donation and on donors' families, and its dehumanizing symbolic connotation. Proponents of such a market feel that these concerns can be minimized and are outweighed by the benefits to

recipients of a market-driven increase in the supply of organs. If organ transplant operations are "sold" by surgeons, inasmuch as the recipient pays the surgeon, the proponents see no harm in selling the organs that make the operations possible.<sup>10</sup>

***A Government Grant Towards Hospital and Funeral Expenses.*** Although the sale of organs is distasteful to many, there is growing support for the concept of a government (federal or state) grant that would be paid to families who donate a relative's organs. This grant, which would be uniform throughout the nation, would be a practical recognition of the family's gift to the community, and would enable poorer families to cover some of the costs (hospital, funeral, etc) incurred in the death of the donor. Those families who chose not to accept the grant could, for example, have the option of donating it to a charity if they wished. Some members of the medical transplant community are concerned with the morality—if not the ethics—of the present situation where almost all concerned with the transplant procedure (surgeons, organ procurement agencies, hospitals, etc.) receive some form of financial reward for their participation, and yet the donor's family, who might have incurred substantial expenses from the hospitalization of the donor, are barred from receiving any form of financial assistance.

It is our hope, however, that if more families are informed of donation options through routine inquiry policies, there will be no need to offer financial incentives.

***Xenografts.*** The Baby Fae case, in which a baboon heart was transplanted into a two-week-old baby with hypoplastic left heart syndrome, showed that a human could survive with a baboon heart for 20 days.<sup>12</sup> Ethical problems raised by this case concern respect for both human and nonhuman animals. Given our current rudimentary knowledge of cross-species transplantation, the chances of significantly prolonging meaningful life seem, at present, relatively remote.

***Modifications in Recipient Selection.*** The scarcity of hearts for transplantation inevitably requires a rationing of the hearts that do become available. The basis for selecting recipients involves a balance between efficiency and equity in the use of organs. Efficiency is clearly favored at the candidacy evaluation stage, while equity plays a larger role in deciding which candidate on the waiting list receives the heart.

The current selection system gives priority to those candidates on the list whose poor physical



condition makes them most urgent, including those who are rejecting a transplant and frequently those who have received a temporary mechanical assist device or artificial heart as a bridge to transplantation. A strict concern for the efficacious use of donated hearts might argue against such an allocation, for the most urgent cases are frequently less likely to do as well as healthier candidates.<sup>3</sup>

While efficiency is important, a strong equity consideration is to avoid abandonment of critically ill patients. Once on the candidate list, one could argue that there is a special commitment not to abandon those in greatest need.

Retransplantation after rejection of a heart also appears to conflict with efficiency by allocating a second heart to a patient who may not have as good a chance of survival as a healthier candidate. Aggressive efforts on behalf of a recipient in acute rejection, however, are viewed by some physicians as essential to demonstrate commitment. Policy in this situation is divided between the major centers.

#### **Official Designation of Transplant Centers.**

Now that heart transplantation has achieved accepted status, a major issue is whether there should be limits on the number of centers doing heart transplants. There were 12 centers performing heart transplants in the US in 1983, but one estimate is that there will be over 250 in 1993. Only one-third of the 71 centers functioning in 1985 performed more than 10 transplants during that year.<sup>3</sup>

The Federal Task Force on Organ Transplantation recommended that heart transplants be carried out only at those centers meeting certain criteria, including a minimum volume of 12 transplants a year.<sup>3</sup> The Medicare coverage decision, announced in July 1986, also limits reimbursement to centers meeting certain requirements for volume and survival. The purpose of permitting only those centers that meet volume and survival criteria to perform heart transplants includes the protection of recipients and the efficient use of scarce organs.

Finally, organ procurement agencies must consider whether it is wise to provide organs to programs that do not meet minimum criteria for safe and

efficacious use of donated organs. Presumably, a national network that controlled the distribution of organs would not permit supply to unqualified centers.

#### **Comment**

The medical and legal constraints on organ supply result in a chronic shortage of hearts for transplantation. It seems that the demand for hearts will always out-strip the supply. How donated hearts are distributed, how recipients are selected, etc, are now emerging as issues of public concern, with demands voiced for public accountability in rationing organs. Medical efficacy plays a major role in selecting recipients, but a variety of equitable and other concerns also enters into the picture. More public scrutiny and debate about conflicts between efficiency and equity are likely, as is a reduction in the freedom now held by medical professionals to resolve these questions.<sup>9</sup> □

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# The Medical Education System in Oklahoma

Michael Lapolla, MHA; F. Daniel Duffy, MD; C.S. Lewis, Jr., MD

**This paper provides a data base and analysis of the effectiveness of the public medical education system in Oklahoma. It provides the facts from which future decisions for Oklahoma health manpower policies might be developed.**

**H**aving enough, and the right specialties of, physicians is a critical component of adequate health care for Oklahoma. The state supports the education of physicians to influence the needed supply and distribution for its citizens. Public policy decisions direct public funding to influence the number of physicians, the specialty of physicians, and to a lesser extent, the location of physician practice. This paper provides a data base and analysis of the effectiveness of the public medical education in Oklahoma. The paper may provide the facts from which wise decisions for Oklahoma health manpower policies might be developed.

## Methods

We developed a comprehensive model of medical education (Fig 1) tracing decisions medical students make as they track from entry to medical school, through residencies, and into their initial practice. The decisions include selecting the location for each level of training, the medical specialty, and the geographical location of practice. The flow of allopathic and osteopathic student decisions was tracked as

accurately as possible. High school and pre-med college locations were not examined.

Data for 1984-90 were obtained from the Office of the Dean, University of Oklahoma College of Medicine (OU-CM); Office of Resident and Student Affairs, University of Oklahoma College of Medicine-Tulsa (OU-CM-Tulsa); the Offices of Medical Education at respective osteopathic hospitals; and the College of Osteopathic Medicine-Oklahoma State University (COM-OSU) Alumni Office. All data were current as of February 1990. OU and OSU completed forms which tracked each GME resident from internship to the first location in practice after all GME was completed. Physician output was categorized by the specialty practice the resident finally entered.

## Results

Oklahoma has two medical schools, the University of Oklahoma College of Medicine, which graduates allopathic (MD) physicians, and the College of Osteopathic Medicine-Oklahoma State University, which graduates osteopathic (DO) physicians. OU provides undergraduate education in Oklahoma City and Tulsa and sponsors graduate medical education programs in Oklahoma City, Tulsa, Enid, and Bartlesville. COM-OSU provides all undergraduate education in Tulsa and internship and other graduate medical education programs in Tulsa, Oklahoma City, and Enid. Both colleges offer student preceptorships in many sites throughout the state.

***The Oklahoma Medical Education Pipeline Model.*** The Oklahoma medical education system educates the majority of new physicians for the state.

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The medical education "pipeline" begins with medical school enrollment and ends 5 to 11 years later upon the completion of graduate medical education (GME) and the establishment of a practice. Starting with high school, the education of a physician can take 13 to 20 years. That physician could practice approximately 30 to 35 years.

The first year medical student is the initial input into the medical education system. The final output is the physician entering practice. A series of intermediate transitions from one level of training to another result from out-of-state students entering Oklahoma medical school or graduate medical education (GME) programs, and Oklahoma students entering out-of-state medical schools or GME programs. Finally, Oklahoma GME graduates may enter practice in or out of state, and Oklahoma medical school graduates may return to Oklahoma after completing out-of-state GME.

#### **Applicants to Medical Schools in Oklahoma.**

Of the 1991 applicants, only 30% at OU-CM and 17% at COM-OSU were residents of Oklahoma (Fig 2a). The total number of applicants to OU is rising, and they are stabilizing at OSU after a recent decline. However, the increase at OU-CM is due to the increasing number of out-of-state applicants. The total number of Oklahoma applicants at both schools has

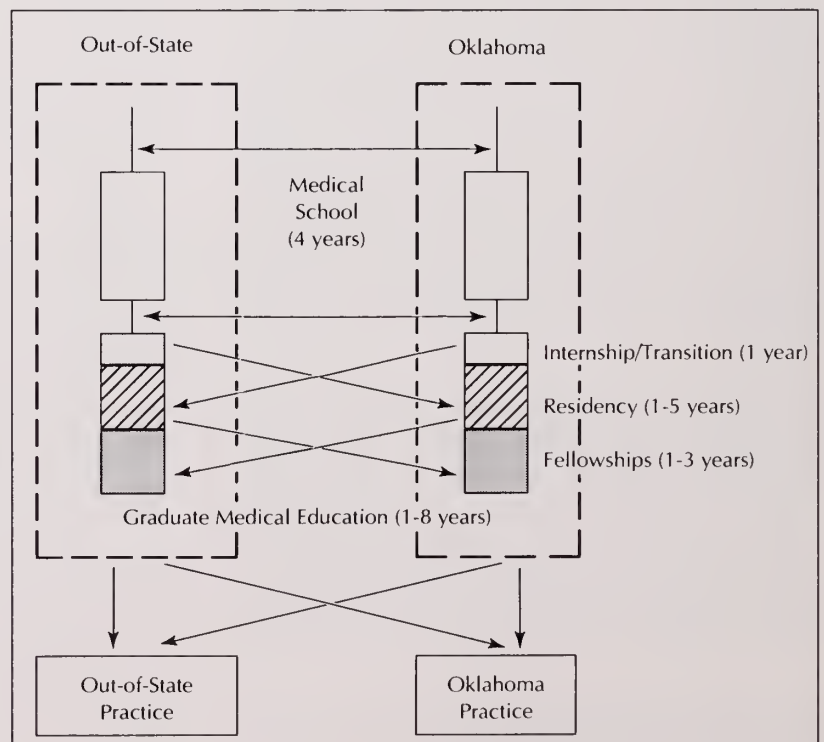
not changed significantly in the last five years.

Non-resident students admitted to Oklahoma medical schools are limited by State Regents for Higher Education policy<sup>1</sup> to 15% of the class size or 20 students, whichever is greater. The OU-CM non-resident students may number as many as 23 (15% of 150) per year and COM-OSU may total 20. Although both schools have large numbers of non-resident applicants, the total number of applicants has little meaning except that both schools may select the best non-resident applicants (Fig 4).

**Students Entering Oklahoma Medical Schools.** The incoming class sizes at both medical schools peaked during 1983-84. The OU incoming class was reduced from 176 to 150 students per year by administrative action of the College of Medicine in 1987. However, the class sizes had fallen below 150 for the two previous years, presumably because of insufficient quality of applicants. One hundred fifty is now the ceiling for class sizes. The university is expecting to enroll the full complement of 150 students each year.

The COM-OSU incoming class sizes have fluctuated since 1985. The new student enrollments for 1988 and 1989 were 73 and 77, respectively. The enrollment dropped precipitously to 55 in 1991, only 40 of whom were Oklahoma residents. Figure 2b

**Figure 1.** The Oklahoma Medical Education Pipeline Model (high school and college undergraduate components not included).





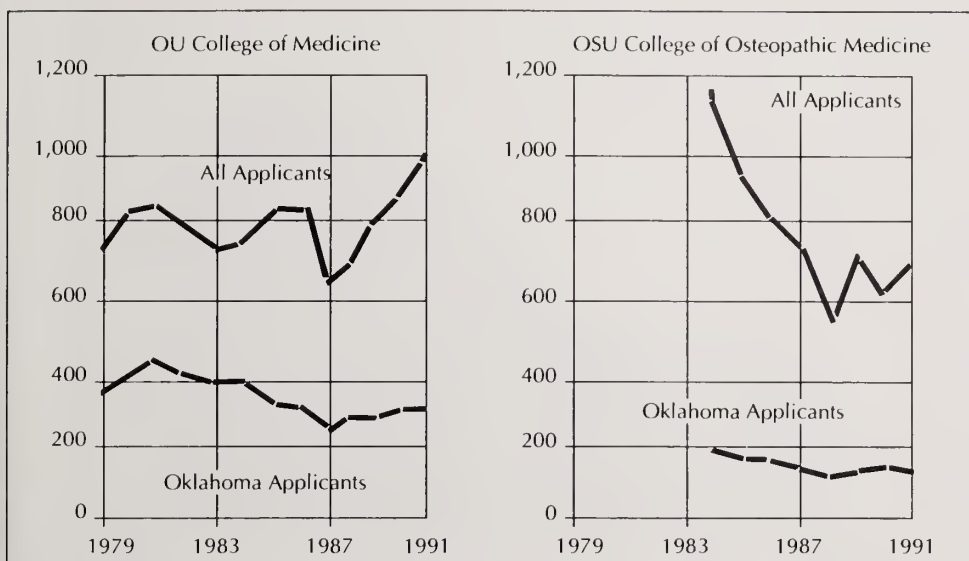


Figure 2a. Applicants to Medical Schools in Oklahoma for 1979-91.

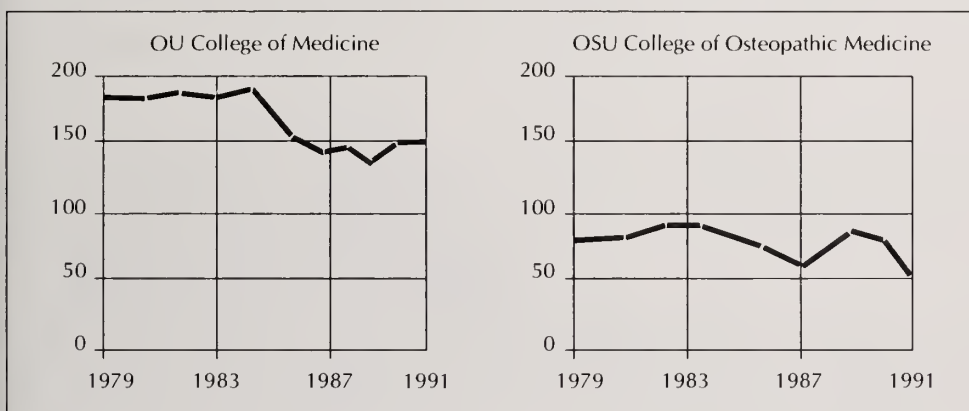


Figure 2b. First-Year Medical Student Enrollment for Public Medical Schools in Oklahoma for 1979-91.

shows the first-year class sizes for the medical schools. The chart includes all first-year students entering and repeating the year.

The decreased first-year enrollments do not correlate to the total number of applications but are driven by enrollment ceilings, the number of qualified Oklahoma applicants, the limitation upon the non-resident students, changes in admission standards as set by the Oklahoma State Regents for Higher Education, and school admission committee internal policies.

**Students Graduating from Oklahoma Medical Schools.** The number of US medical school graduates (MD and DO) peaked during the mid-1980s, and has begun a slow decline (Fig 3). The number of Oklahoma medical school graduates peaked earlier during 1978-81, and has declined more than 30% since then. The number of 1991 graduates was almost identical to the number in

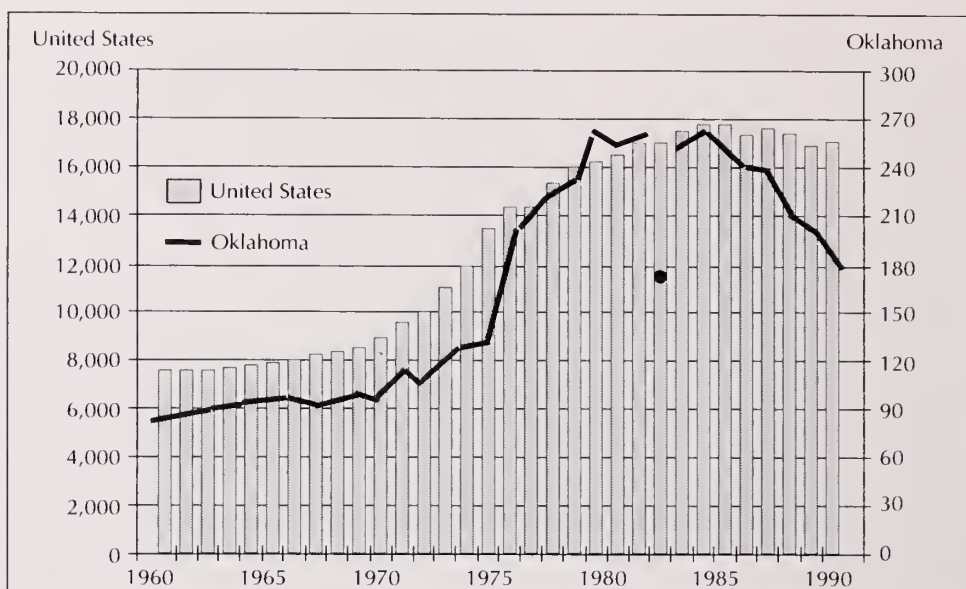
1976. The decline in the number of Oklahoma graduates during the 1980s occurred at a much faster rate than the decline nationally. (Note: The COM-OSU converted from a three-year to a four-year curriculum in 1983-84. Therefore there were no graduates in 1983.)

The major increase in the number of Oklahoma graduates occurred with the opening of OU-CM-Tulsa and COM-OSU. The University of Oklahoma maintains two campuses, one in Oklahoma City and the other in Tulsa. The number of graduates from OU-CM-Oklahoma City was the same in 1991 as in 1970. The total number of graduates in 1991 was similar to the number in 1976 (Fig 4).

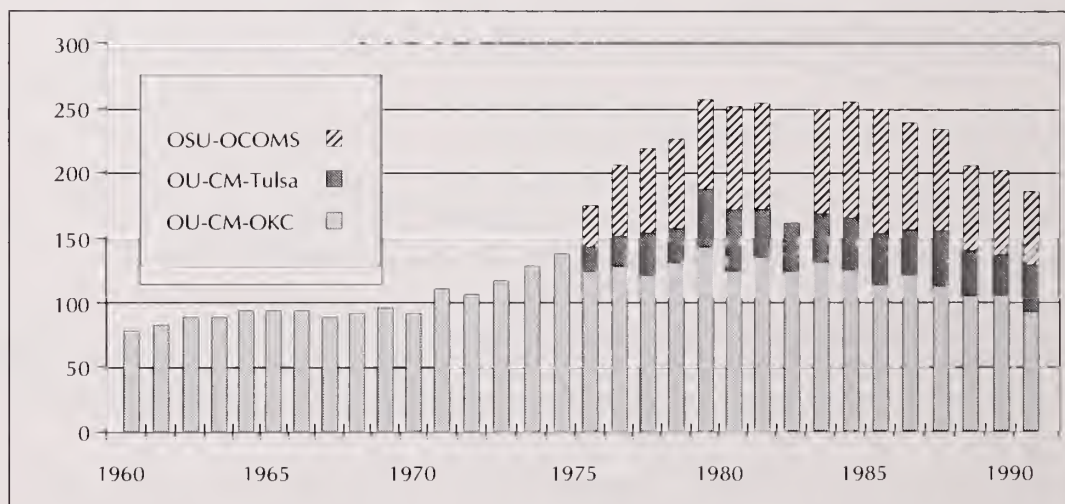
**Students Entering Oklahoma GME Programs.** Student specialty preferences fluctuate some from year to year. As shown in Figure 5, some national trends have occurred over the past 12 years.

The most significant changes were in family prac-

**Figure 3.** Allopathic (MD) and Osteopathic (DO) Graduates from US and Oklahoma Schools 1960-91.<sup>2</sup> (COM-OSU converted from three- to four-year program in 1983 and had no graduates in 1983.)



**Figure 4.** Graduates From Oklahoma Medical Schools 1960-90.<sup>3</sup> (COM-OSU converted from three- to four-year program in 1983 and had one graduate in 1983. The University of Oklahoma College of Medicine graduates are displayed by the campus where the clinical education is received. This is done for illustrative purposes. All MD graduates receive identical degrees from the University of Oklahoma.)



tice and support specialties. The percent of US senior MD students selecting family practice declined 24% between 1979 and 1991. In 1979, 14% of matching students selected family practice. In 1991, only 10.6% did so. The proportion of students choosing support specialties (anesthesiology, emergency medicine, pathology, physical medicine, preventive medicine, radiology, and nuclear medicine) increased 53% from 6.4% to 9.8%.

Osteopathic education programs do not have a formal national matching program as exists for the allopathic GME programs.

Osteopathic physicians are seeking GME beyond the internship year in greater numbers. In Oklahoma, over half the internship graduates will pursue

additional GME in lieu of beginning a general unspecified practice.

The proportion of Oklahoma osteopathic internship graduates seeking additional GME (both MD and DO) has increased significantly since 1983. In 1983, only 30% sought additional GME, but by 1989 more than 57% did so. Additional GME was sought by 53% of COM-OSU graduates and by 69% of the out-of-state osteopathic school graduates in 1989.<sup>5</sup> In 1991, there were 31 osteopathic students enrolled in OU GME programs with 16 at the Oklahoma City campus and 15 at the Tulsa campus.<sup>6</sup>

The number of available GME positions, and the enrollment in them, is an indicator of GME production capacity. GME program directors select resident

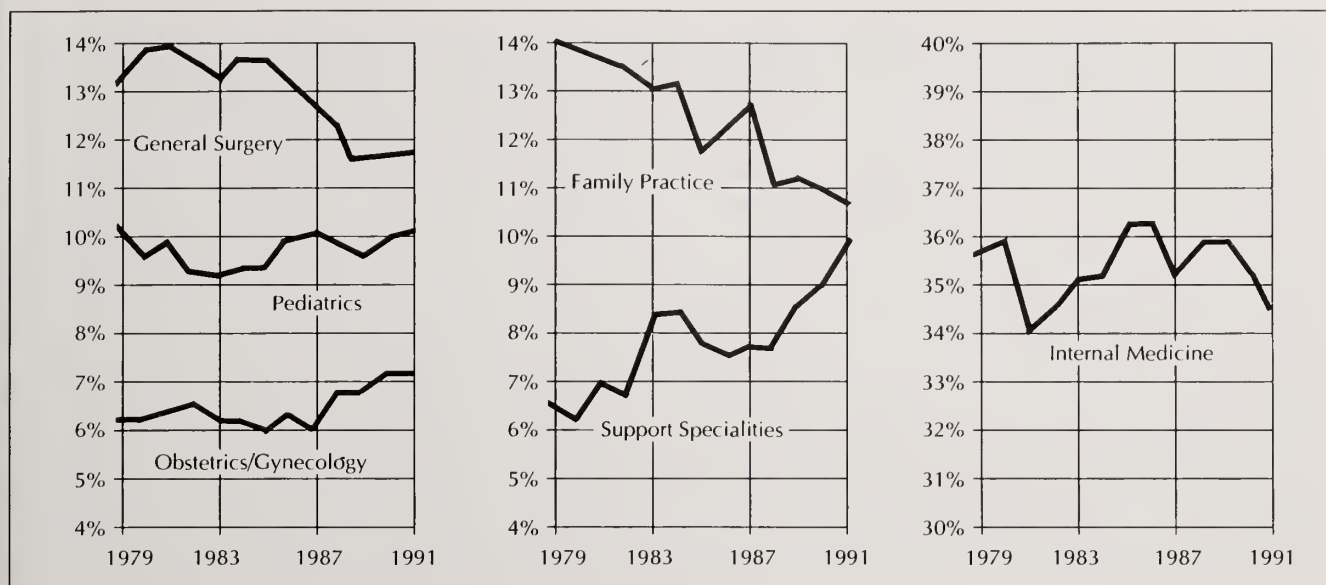


Figure 5. Percentage of US Senior Medical Students Choosing Selected Specialties.<sup>4</sup>

physicians from a changing pool of medical student applicants. The number of positions filled depends upon many factors. Among them are interests of student applicants, reputation of the GME program, and program budgetary considerations. The recruiting competence, effort, and dedicated resources of GME program officials also have a bearing upon enrollments. Table 1 summarizes available GME program positions and enrollment activity by specialty group and sponsor.

**Physicians Completing Oklahoma GME.** Oklahoma GME programs graduated a total of 1,576 physicians during 1984-89; 1,389 had entered practice as of January 1990, and 187 trainees were still enrolled in other graduate medical education programs.

Of the 1,389 practicing graduates, 740 (53%) entered practice in Oklahoma and 649 (47%) entered practice out-of-state (Table 2). The University of Oklahoma College of Medicine—Oklahoma City produced 439 (60% of the state total) graduates, the University of Oklahoma College of Medicine—Tulsa produced 143 (19%), and DO GME programs produced 158 (21%). Of the primary care physician graduates funded by the Oklahoma Physician Manpower Training Commission (PMTTC), 59% entered practice in Oklahoma. The other specialties retained 48% of the graduates for practice in Oklahoma.

Over 60% of the family practice, general practice, internal medicine, and psychiatry graduates entered

practice in Oklahoma; the surgical and pediatric specialties had the lowest retention rates.

**Annualized GME Production Model for 1984-89.** Figure 6 represents the average annual GME production model of the University of Oklahoma College of Medicine (Oklahoma City and Tulsa campuses), and Oklahoma's osteopathic hospitals. These programs graduated an average of 263 physicians annually. Of the 232 graduates currently in practice, 124 (53%) chose to practice medicine in Oklahoma, 108 (47%) practiced out-of-state, and 31 remain in additional GME training they sought after the completion of their initial Oklahoma-based graduate medical education experience. The chart depicts the professional education and practice choices made by these graduates.<sup>8</sup>

**Graduate Medical Education Financing.** Graduate medical education is primarily financed by hospitals and the Oklahoma Physician Manpower Training Commission. The commission will provide approximately 25%, while hospitals (both public and private) will provide about 75% of the funding.

The Physician Manpower Training Commission provides public funds to support selected primary care GME programs. An estimated \$4.7 million per year is spent in GME programs for resident stipend support. PMTC-funded programs produced 682 graduates during 1984-89, for an average of 114 graduates per year. An annual average of 69 of these physicians chose to practice in Oklahoma.



**Table 1. Positions Offered and Enrollment Rates for Oklahoma Multi-Year GME Programs by Specialty Group for 1984-89<sup>7</sup>**

Specialty Group	OU-CM-Oklahoma City		OU-CM-Tulsa*		DO Residencies**	
	Total Positions	Enrollment Rate	Total Positions	Enrollment Rate	Total Positions	Enrollment Rate
Family practice	438	71%	288	98%	6	83%
Obstetrics & gynecology	114	98%	96	100%	18	89%
Pediatric specialties	482	81%	132	80%	24	75%
Medicine specialties	858	95%	249	93%	72	88%
Surgical specialties	660	93%	95	99%	140	86%
Hospital specialties	602	83%	0		90	80%
Psychiatric specialties	244	59%	59	93%		
Other specialties	7	100%	0		0	
All programs	3,405	85%	919	94%	350	84%
<b>Individual Specialties</b>						
Pediatrics	408	81%	132	80%	24	75%
Internal medicine	510	93%	249	93%	72	88%
General surgery	336	90%	95	99%	42	95%
<b>PMTC Specialties***</b>	1,470	85%	765	93%	120	85%

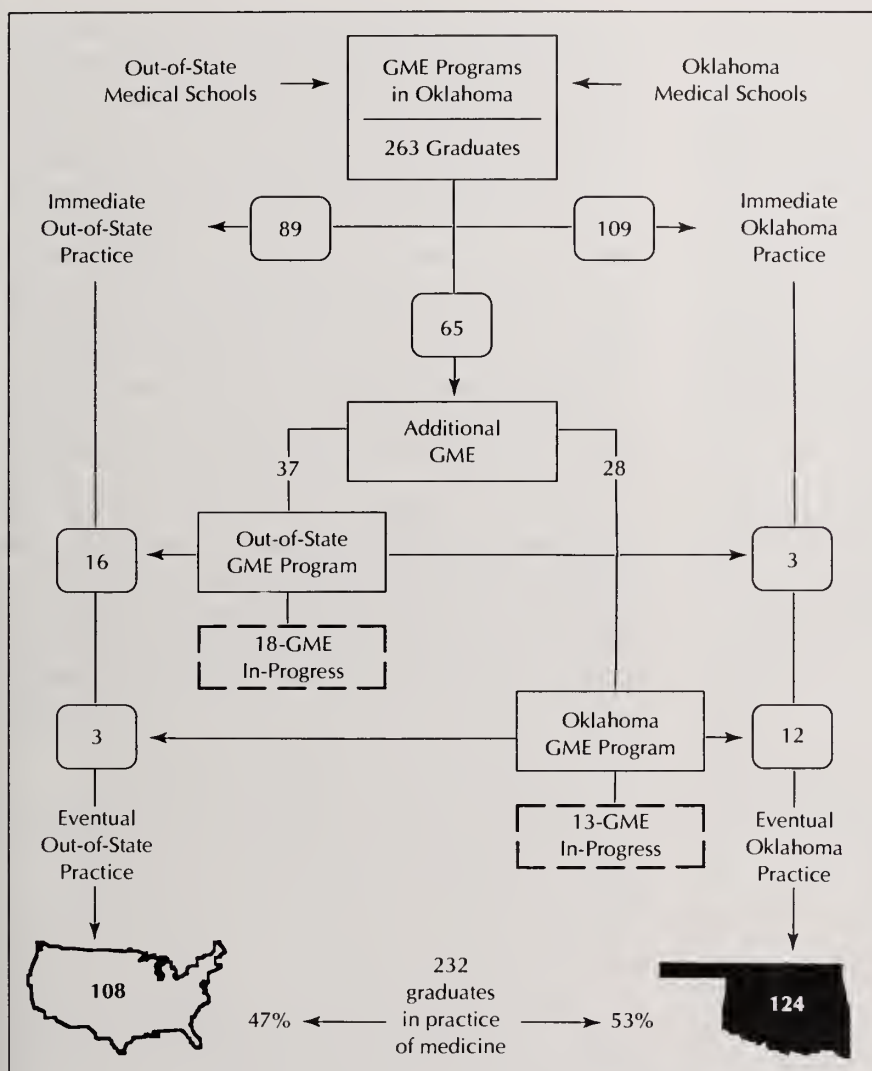
\* Does not include one-year preliminary residency positions in medicine and surgery.

\*\* DO internship positions had a 95% fill rate (361 filled of 381 slots for 1984-89).

\*\*\*Oklahoma Physician Manpower Training Commission specialties include family practice, pediatrics, obstetrics/gynecology, and internal medicine.

**Table 2. Practice Location of Oklahoma GME Graduates from 1984-89**

Specialty Grouping	Oklahoma Practice		Out-of-State Practice		Total
<b>PMTC Specialties</b>					
Family practice (MD)	115	63%	68	37%	183
General practice (DO)	102	63%	61	37%	163
Internal medicine	103	64%	57	36%	160
Obstetrics & gynecology	28	50%	28	50%	56
<b>Pediatrics</b>	53	44%	67	56%	120
Sub-total PMTC specialties	401	59%	281	41%	682
<b>Additional Specialties</b>					
Psychiatric specialties	34	81%	8	19%	42
Medicine subspecialties	112	54%	96	46%	208
Hospital specialties	92	50%	92	50%	184
Surgical specialties	72	36%	128	64%	200
Pediatric subspecialties	6	33%	12	67%	18
<b>Other Specialties</b>	23	42%	32	58%	55
Sub-total additional specialties	339	48%	368	52%	707
<b>Total Graduates in Study</b>	740	53%	649	47%	1,389



**Figure 6.** Annualized GME Production Model for 1984-89 (all Oklahoma-based MD and DO Graduate Medical Education programs).

An estimated PMTC-administered public expenditure of \$68,000 produces one physician graduate for practice in Oklahoma. The expenditure only represents the stipend and a few support costs of each position over a three-year period. Other teaching costs are not included.

In 1990, the state of Oklahoma provided almost \$5 million per year in stipend support for 210 FTE Oklahoma-based primary care GME positions. These funds will provide "full" stipends for 142 family practice GME positions and partial stipends for an additional 137 primary care GME positions.

Of the estimated 736 FTE Oklahoma-based GME (MD and DO) positions, the state of Oklahoma (PMTC) funds 29% of the FTE positions and provides 24% of the estimated cost of these positions.

Oklahoma's public and private teaching hospitals

will provide over \$15 million dollars in intern/resident compensation costs, plus additional financing to cover non-salary expenses related to the GME programs. These funds will be expended by the Oklahoma Medical Center, a publicly subsidized facility in Oklahoma City; four private teaching hospitals in Tulsa; and one private teaching hospital each in Oklahoma City and Enid.

## Conclusions

The number and specialty of physicians produced by a state or nation is dependent upon the graduate medical education system. The number of medical students enrolled in, and graduated from, US medical schools is only one input to the GME system.

The Oklahoma physician production system cannot be managed by manipulating the entering

medical school class size and failing to adjust GME positions.

The physician production system is complex, involving many student decision points. The ultimate production and retention of physicians within a state is dependent upon many public and private programs that are for the most part semi-autonomous and uncoordinated. The GME output is uncoordinated and produces random results.

- **Applicants to Oklahoma medical schools have increased since 1987.** Almost all of the increase is due to out-of-state applicants. The Oklahoma applicants have stabilized at slightly over 400 per year. In 1991 there were 307 Oklahoma applicants to OU-CM and 117 to COM-OSU.

- **Enrollments in Oklahoma medical schools have declined since 1984.** The OU College of Medicine has stabilized at 150 new students per year. COM-OSU had the fewest number of first-year students in 1991 (55) since the school was established. This change in enrollments has no correlation to the increasing number of applicants but is the result of other admission policy decisions.

- **The number of Oklahoma medical graduates in 1991 was almost identical to the number in 1976.** In 1976 both the Tulsa branch campus of OU-CM and the College of Osteopathic Medicine (Tulsa) graduated their first classes. During the period of 1980-86, Oklahoma's medical schools graduated the largest classes ever. It is unlikely that these numbers will be attained in the near future.

- **The specialty choices of US allopathic (MD) medical students is changing.** The proportion of US medical students choosing specialties through the National Residency Matching Program shows changing preferences. The sum of these individual decisions creates the mix of specialties serving the health care system. The support specialties (the hospital-based specialties of anesthesiology, emergency medicine, pathology, physical medicine, preventive medicine, radiology, and nuclear medicine) have become much more popular, and family practice less popular. Obstetrics has increased in popularity while pediatrics and internal medicine have remained fairly constant. Surgery has declined.

- **The specialty choices of Oklahoma osteopathic (DO) medical students are changing.** Until 1983, three of four Oklahoma osteopathic students entered practice as general practitioners after completing a single GME internship year. Now over half are seeking multi-year GME programs offered by either the osteopathic or allopathic professions.

- **The average enrollment rate in all Oklahoma GME programs was 87% during 1984-90.** Coincident with the reduction in Oklahoma medical school graduates, the enrollment rate is being maintained by allopathic programs hiring international medical graduates (IMGs) and osteopathic graduates. Most GME programs at the three Oklahoma sites have very high enrollment rates. The exceptions are family practice, pediatrics, psychiatry, and hospital-based specialties at OU-CM-Oklahoma City; pediatrics at OU-CM-Tulsa; and osteopathic pediatrics. Enrollment rates are a function of many factors, including the number of available positions, recruiting ability, program reputation, and available applicants.

- **Potential GME program applicants are declining, while the number of GME positions remains the same.** Although the total number of medical school graduates is declining, the number of physicians produced is not declining. Therefore the number of GME program positions is larger than the number of Oklahoma medical school graduates to fill them. Programs must fill with more out-of-state students and/or foreign medical graduates.

- **The Oklahoma GME programs produced an average of 263 physicians per year.** The Oklahoma GME annual production was 133 for OU-CM-Oklahoma City, 43 for OU-CM-Tulsa, 41 for osteopathic hospital internships, and 15 for osteopathic hospital residencies.

- **The Oklahoma GME programs produced an average of 124 physicians per year for Oklahoma practice.** Slightly over half (53%) of those entering practice did so in Oklahoma. The Oklahoma retention rates were 56% for OU-CM-Tulsa, 55% for OU-CM-Oklahoma City, 52% for osteopathic hospital internships, and 36% for osteopathic hospital residencies. The specialties of family practice, general practice, general internal medicine, and psychiatry all had an Oklahoma retention rate of over 60%; the surgical and pediatric specialties had the lowest rates.

- **Incremental changes in medical school enrollment will not change the number of physicians produced.** Oklahoma medical school graduates are only potential inputs to GME programs that ultimately produce physicians. Any deficit in these inputs might be made up by out-of-state students or FMG physicians. Any surplus of Oklahoma students must seek out-of-state GME opportunities, and have a lower probability of returning to Oklahoma for practice.



• **The inputs and outputs of medical school and GME programs are not matched.** While medical school applications are up, admissions and graduates are down. While the number of medical school graduates in the US and Oklahoma is down, the number of GME positions and graduates (physicians) remains the same. This is due to the medical school and GME programs being independent of each other for purposes of public policy planning and coordination.

• **Uncoordinated medical school and GME enrollments result in fragmented manpower policy.** The failure to coordinate medical school enrollments with GME program composition results in fragmented manpower policy. The outputs (trained physicians) will reflect the needs and priorities of GME programs and individual specialty boards. There is no existing forum at the state or national level to provide debate and policy implementation for physician supply. The health care needs or desires of the public can be neither comprehensively nor directly served. □

#### End Notes

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#### The Authors

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Dr Duffy is professor and chairman, Department of Internal Medicine, University of Oklahoma College of Medicine—Tulsa.

Dr Lewis is a practicing internist in Tulsa. He is a past president of the Oklahoma State Medical Association and the American College of Physicians.

**T**he truly scientific spirit, then, should make us modest and kindly. We really know very little, and we are all fallible when facing the immense difficulties presented by investigation of natural phenomena. The best thing, then, for us to do is to unite our efforts, instead of dividing them and nullifying them by personal disputes.

— Claude Bernard  
*An Introduction to the Study of  
Experimental Medicine*

## House Bill 1012: Perspective on New HIV Law

James Hutton, MD; John Harkess, MD; Robert Cole, JD

The medical and legal complexities of a new state law are discussed.

House Bill 1012, which went into effect on September 1, 1991, amended current law regarding sexually transmitted diseases, and it will greatly affect several aspects of patient care. The bill was written primarily with HIV infection in mind, but hepatitis B and other communicable diseases are covered by many of the provisions. Certain aspects have particular importance for health care providers and are summarized here. The new law deals with release of information for persons who have or may have any communicable or venereal disease that is reportable to the Oklahoma State Department of Health (OSDH). Previous law protects release upon court order, written consent of the infected individual, and reporting to the OSDH. The new law additionally protects health care providers who release information to other providers "within a therapeutic environment for the purpose of diagnosis and treatment."

The legal definition of a "therapeutic environment" has not been established, but the intent of this provision was to protect the right of health care providers to freely communicate relevant aspects of patient history to other providers involved with the health care of that patient. Although written with physicians and nurses in mind, we believe this provi-

sion means that the health care professional can disclose the diagnosis to others who legitimately have access to the chart. This would include many others such as ancillary, technical, medical records, quality review, utilization review, peer review, or physician's office personnel. These individuals provide support for the therapeutic environment and have legitimate need for access to medical records.

Obviously, those who break the confidentiality outside of their health care responsibilities would risk action. Failure to adhere to this law may result in a misdemeanor punishable by no less than \$1000 and not more than 30 days imprisonment in addition to the possibility of civil suit brought by the subject of the disclosure violation. Discussion among providers of confidential information in the proximity of those who are not privileged to that information should be strongly discouraged. Therefore, these diagnoses perhaps even more so than others, are not appropriate for hallway or elevator discussions.

Written consent for release of information concerning communicable diseases now requires specific language. Releases should include a notice in bold typeface that **"the information authorized for release may include information which may be considered a communicable or venereal disease which may include, but is not limited to diseases such as hepatitis, syphilis, gonorrhea, and the human immunodeficiency virus, also known as Acquired Immunodeficiency Syndrome (AIDS)."**

Hospitals and clinics should routinely include this language in consent statements to obtain records

Direct correspondence to James P. Hutton, MD, 1805 East 15th Street, Tulsa, OK 74104.

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from other sources. In this way, the proper language is in place if the patient has documentation of one of these diseases. When receiving a request to release records to a third party, this language must be present to protect that disclosure if one of these diseases is present. If the language is not in the release, it would be incumbent upon you to delete all references to communicable and venereal diseases or to request the proper language be added to the consent form. Since screening the entire contents of each chart is logistically not feasible, a reasonable policy would be to routinely request that this language always be present regardless of the diagnosis. A reply to the third party (clinic, hospital, insurance company, HCFA, DHS, lawyer, etc) could request the proper language prior to disclosure of any information.

Hospitals may choose to place this language in a standard consent-to-treat form signed at the time of admission. Such documentation would be helpful for permission to release information to insurers for those who know of their diagnosis at the time of admission. Its usefulness for those who learn of a diagnosis protected under this law during that hospitalization (and after they had signed the release form) would probably be limited.

Additionally, the new law does not change the physician or institutional responsibility to report communicable or venereal diseases to the state department of health. These cases must still be promptly reported, and no consent from the patient is required.

The new law changes requirements for health care providers when performing HIV testing. Written consent must now always be obtained from the patient prior to testing, with two exceptions. One is with court order. The other is when "a health or emergency care provider verifying a substantial exposure to HIV from the person" to be tested offers written documentation. For example, a nurse who sustains a needlestick would fill out an incident report to request testing of the patient.

We believe that the intent of this section was to allow testing whenever a substantial exposure to blood or body fluids occurred. However, that is not what the law says. The wording requires that the exposure be to HIV (ie, it is already known that the source of the exposure is HIV infected). As written, this exception seems to offer little usefulness since testing does not tell you anything new. We advise that written consent always be obtained from those patients who are sources of such occupational exposures.

Also, you are protected when providing results of testing to the individual tested, to a person incurring

an exposure, or to the state department of health. Previous law also protects you in disclosing the diagnosis to a sex- or needle-sharing partner of the patient even without permission. However, it is recommended that you provide this exposure information to the health department and let them do the contact tracing. The tester is also protected in failing to diagnose or falsely diagnosing the presence of HIV based on inaccurate test results, provided the testing was done according to acceptable standards.

The new law also reaffirms existing law giving courts the authority to require HIV testing of persons accused of sexual offenses such as rape, forcible sodomy, or attempting to intentionally transmit HIV infection. The courts may order HIV testing on arraignment (ie, prior to conviction or exoneration) of the accused person and may provide the result to victims of the alleged offenses. This provision was

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## ***Further amendments and clarifications to this law are already being drafted...***

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made in response to recent cases in other states where victims of sexual assaults have been unable to find out the HIV status of their assailants.

The testing is not automatic or required in every case, but can be done at the discretion of the court if compelled by the circumstances of the case or if requested by the victim or the victim's legal guardian. Any positive test results would be provided to the victim by the Oklahoma State Department of Health in conjunction with counseling and free follow-up testing for HIV and/or other sexually transmitted diseases.

The bill also clarifies existing law which made it illegal "for any person to engage in any activity with the intent to infect or cause to be infected any other person with the human immunodeficiency virus." The section was modified such that a person would have to know he or she was infected with HIV and would also have to engage in a behavior "reasonably likely" to transmit HIV in order to be in violation of the law. A person knowing that he or she was infected with HIV



would be in violation of the law if he or she had sex which involved the transfer of semen or vaginal secretions without informing the partner of their infection. These changes were made to prevent persons from being charged with intending to transmit HIV if they had no reason to believe they were infected or for behaviors such as spitting that do not transmit HIV.

The complexity and potential confusion of this law is apparent. Further amendments and clarifications to this law are already being drafted and may come under consideration during the current Oklahoma legislative session. □

#### The Authors

James Hutton, MD, is associate professor of medicine at the University of Oklahoma College of Medicine-Tulsa and is in private practice in infectious diseases and hospital epidemiology in Tulsa.

John Harkess, MD, previously with the Sexually Transmitted Disease section of the Oklahoma State Department of Health, is now a fellow in infectious diseases at the University of Oklahoma Health Sciences Center, Oklahoma City.

Robert Cole, JD, is general counsel for the Oklahoma State Department of Health, Oklahoma City, and adjunct professor of law at Oklahoma City University College of Law.

I please myself with thinking that the method of teaching the art of healing is becoming every day more conformable to what reason and nature require; that the errors introduced by superstition and false philosophy are gradually retreating; and that medical knowledge, as well as all other dependent upon observation and experience, is continually increasing in the world. The present race of physicians is possessed of several most important rules of practice, utterly unknown to the ablest in former ages, not excepting Hippocrates himself, or even Aesculapius.

— William Heberden  
Letter to Dr Thomas Percival  
October 15, 1794

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**MAY 28 through 31, 1992**

Opening Session: 9 a.m., Friday, May 28

Closing Session: 9 a.m., Sunday, May 31

All members, delegates, alternate delegates, and county society officials are encouraged and urged to attend. Business to be brought before the House of Delegates must be submitted by April 28, 1992.

All items of business will be debated in open reference committee hearings on May 28, 1992.

Any member of the association may submit business for consideration by the House of Delegates. For help in preparing information for submission, please contact OSMA headquarters, 601 Northwest Expressway, Oklahoma City, Oklahoma 73118, 405-843-9571 or 1-800-522-9452.

**Larry Long, MD  
Speaker of the House**



*Blankenship and Stein*

## OSMA Board of Trustees names award winners at winter meeting

The Board of Trustees of the Oklahoma State Medical Association met in Oklahoma City on Sunday, February 9.

The trustees named Jerry B. Blankenship, MD, Enid urologist, as winner of this year's Wyeth-Ayerst Physician Award for Community Service (formerly the A.H. Robins Award). Howard F. Stein, PhD, retired professor of family and community medicine at the University of Oklahoma Health Sciences Center, was voted recipient of the Donald J. Blair Friend of Medicine Award. The awards will be presented at the Annual Meeting of the OSMA House of Delegates in May.

In addition to his many professional activities, Dr Blankenship serves as an elder in Enid's Central Christian Church; he is also on that church's General Board of Directors. He is an active member of the Enid Rotary Club and has been very involved with the Greater Enid Chamber of Commerce.

Dr Blankenship is a member and supporter of the Enid-Vance Air Force Base Association and is currently president of the Enid High School Basketball Booster Club. In 1986 he was asked to serve on the Board of Trustees of Phillips University and since 1989 has been vice-chairman of that board. He was instrumental in the inception of the Cherokee Strip Foundation and is active in plans for the strip's centennial celebration.

Dr Stein, in addition to more than a decade of teaching in both Oklahoma City and Enid, is an

internationally recognized cultural anthropologist. He also is one of the most widely published of OU's faculty members, addressing the questions of cultural and interpersonal relations and their importance to physicians and their patients. More recently, he has served as residency director in the Division of Occupational Medicine.

Among the other actions of the Board of Trustees were the following:

- Approved and forwarded to the House of Delegates several housekeeping changes in the bylaws of the Physicians Liability Insurance Company (PLICO);
- Considered and accepted a draft from State Epidemiologist Paul Zenker, MD, regarding Oklahoma policy on HIV-infected health care workers. The draft was accepted for legislative purposes, with the board reserving the right to address the specific legislation. The draft will be considered again in May after study and recommendation from a committee;
- Voted to refer to the House of Delegates in May three HIV-related resolutions that had been tabled in November;
- Approved the merger of Alfalfa-Woods County Medical Society and Garfield County Medical Society;
- Approved Life Membership status for Charles Benson, MD, Cherokee; Leon D. Combs, MD, Shawnee; Dalton B. McInnis, MD, Oklahoma City; John M. Moore, MD, Pauls Valley; and Jack E. Randle, MD, Tulsa.

J

### CALL FOR RESOLUTIONS

All resolutions to be presented to the Oklahoma State Medical Association House of Delegates Annual Meeting must be received in the executive offices no later than thirty (30) days prior to the meeting. This year's meeting will be May 28-31, 1992, at the Marriott Hotel in Oklahoma City.

County medical societies or individuals wishing to submit resolutions should mail them to OSMA, 601 Northwest Expressway, Oklahoma City, OK 73118. Should you need assistance in drafting such resolutions, please contact the executive offices.

**RESOLUTIONS MUST BE SUBMITTED ON OR BEFORE APRIL 28, 1992**

## OU medical professor to chair national committee on licensing tests

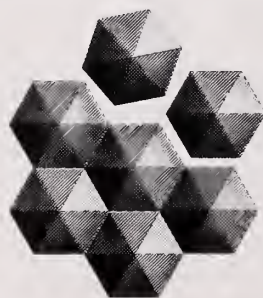
Gordon H. Deckert, MD, distinguished professor at the University of Oklahoma Health Sciences Center in Oklahoma City, has been appointed to chair a national committee studying the content of medical licensing tests. Dr Deckert will chair the Step 3 Test Material Development Committee, part of the United States Medical Licensing Examination.

Dr Deckert, who has had numerous responsibilities with the National Board of Medical Examiners, said broad-based changes are needed in the way physicians are educated and tested. More emphasis, he said, needs to be placed on psychologically oriented learning rather than "factual" learning.

One of the committee's primary goals will be to redesign portions of the medical licensing test to better evaluate applicants' cognitive skill development, an area often neglected by both educators and licensing boards. Cognitive skill development, however, is an essential characteristic of competent, experienced physicians, Deckert noted.

Nationally, Dr Deckert is a strong advocate of medical education reform in the United States. Locally, he serves as program director of the Oklahoma Model of Medical Education for the Twenty-First Century (OMME-21), a project at the OU College of Medicine that is expected to have a major influence on the way physicians are educated and trained.

The program may advocate early admission into medical school, reducing the length of time spent in becoming a physician from 12 to 10 years, grouping courses together to boost cost-effectiveness, and having medical colleges provide students with hands-on training in settings more typical of the shape of practice in the twenty-first century. In addition, curricula would more appropriately use the brain's natural process of "chunking" information, which involves the grouping together of certain sets of information. J



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*In Oklahoma City this year*

## Plans shaping up for 1992 edition of association's Annual Meeting

The 1992 Annual Meeting of the OSMA House of Delegates will be a bit later than usual this year. Instead of the first weekend in May, the meeting will run from Thursday afternoon, May 28, through Sunday morning, May 31. Site of the meeting is the Marriott Hotel in Oklahoma City.

The OSMA Board of Trustees is scheduled to meet Thursday afternoon at OSMA headquarters. On Friday morning, the House of Delegates will convene its Opening Session at the Marriott. Reference committee meetings will follow immediately afterward.

The University of Oklahoma (OU) College of

Medicine will present scientific programming Thursday afternoon. Its Alumni Association Awards Dinner will be Friday evening.

On Saturday, morning committee meetings and caucuses will be followed in the afternoon by a PLICO loss prevention seminar. The President's Banquet Saturday evening will feature the inauguration of new OSMA President James D. Funnell, MD, Oklahoma City obstetrician/gynecologist.

The Closing Session of the House of Delegates is scheduled for Sunday morning, May 31. □

## OSMA/HMSS sets annual meeting for May 29 in Oklahoma City

The OSMA Hospital Medical Staff Section (HMSS) will hold its annual meeting in conjunction with the Annual Meeting of the OSMA House of Delegates in May.

The OSMA/HMSS will meet on Friday, May 29, beginning at 7 AM in the Oklahoma City Marriott Hotel. The two-hour section meeting will conclude prior to the opening of the OSMA House of Delegates.

Items of business for the section will include the election of a delegate to the OSMA House of Delegates as well as to the section's governing council. The

section will also review and discuss resolutions introduced to the OSMA reference committees.

The OSMA/HMSS encourages the chief of staff or president of each hospital medical staff in Oklahoma to select a physician representative to the OSMA/HMSS and plan to attend the annual meeting. This is an ideal time to discuss hospital-medical staff issues.

For further information, contact Robert Baker, OSMA staff, or William O. Coleman, MD, chairman.

— William O. Coleman, MD  
Chairman, OSMA-HMSS

## PLICO and OSMA announce 1992 loss prevention seminars schedule

The Physicians Liability Insurance Company (PLICO), in conjunction with the Oklahoma State Medical Association (OSMA), recently issued its list of loss prevention seminars for 1992.

All Oklahoma physicians insured by PLICO are required to attend a loss prevention seminar during their first year of insurance coverage and every three years thereafter.

PLICO is urging physicians to attend a seminar as early in the year as possible. Last year, the company noted in its January 1992 newsletter, several physicians signed up for the last program of the year, only to find at the last minute that their schedules made attendance impossible. They then had to arrange for special programs that cost them a fee of \$1,000 or more.

This year's seminars are scheduled at various locations across the state and include a number of special interest programs. Preregistration is not required but is requested as an aid to planners. Questions about the seminars may be directed to Debbie Thurmond at the OSMA, 1-800-522-9452 or 405-843-9571.

The 1992 seminar schedule to date is as follows:

### 1992 PLICO Loss Prevention Seminars

March 21 Saturday	Marriott Hotel 3233 N.W. Expressway Oklahoma City (Oklahoma State Orthopaedic Society)	9:30 AM-12:30
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(continued)



## PLICO seminars *(continued)*

March 22 Sunday	Marriott Hotel 10918 East 41st Tulsa (AIDS)	1:30-4:30 PM	June 4 Thursday	Lincoln Plaza Hotel 4345 Lincoln Boulevard Oklahoma City (Oklahoma Academy of Family Physicians)	1-4 PM
April 4 Saturday	Philbrook Museum of Art 2727 Rockford Road Tulsa (Oklahoma Society of Anesthesiology)	8 AM-Noon	June 7 Sunday	Marriott Hotel 10918 East 41st Tulsa (Breast Cancer)	1:30-4:30 PM
April 5 Sunday	Holiday Inn West 801 S. Meridian Oklahoma City (AIDS)	1:30-4:30 PM	June 11 Thursday	Best Western Inn 2818 S. Van Buren Enid	5:30-8:30 PM
April 11 Saturday	Doubletree Hotel (downtown) 616 W. 7th Tulsa (Oklahoma State Radiological Society)	1-4 PM	June 16 Tuesday	Northwest Inn Highway 270 South Woodward	5:30-8:30 PM
May 3 Sunday	Marriott Hotel 10918 East 41st Tulsa	1:30-4:30 PM	June 18 Thursday	Howard Johnsons 1125 E. Gore Boulevard Lawton	5:30-8:30 PM
May 30 Saturday	Marriott Hotel 3233 N.W. Expressway Oklahoma City (OSMA Annual Meeting)	1:30-4:30 PM	June 23 Tuesday	Holiday Inn 2705 W. Broadway Ardmore	5:30-8:30 PM
			June 25 Thursday	Holiday Inn US Hwy 69 Bypass South McAlester	5:30-8:30 PM
			June 28 Sunday	Marriott Hotel 3233 N.W. Expressway Oklahoma City (Breast Cancer)	1:30-4:30 PM

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Oklahoma Osteopathic Association  
Oklahoma State Medical Association  
Oklahoma County Medical Society  
Tulsa County Medical Society

June 30 Tuesday	Park Inn 2140 Gary Freeway Clinton	5:30-8:30 PM
August 9 Sunday	Marriott Hotel 3233 N.W. Expressway Oklahoma City (Hospital Credentialing)	1:30-4:30 PM
August 16 Sunday	Marriott Hotel 10918 East 41st Tulsa (Hospital Credentialing)	1:30-4:30 PM
September 13 Sunday	Marriott Hotel 3233 N.W. Expressway Oklahoma City (Medical Records)	1:30-4:30 PM
October 11 Sunday	Marriott Hotel 10918 East 41st Tulsa (Medical Records)	1:30-4:30 PM
October 20 Tuesday	Marriott Hotel 10918 East 41st Tulsa	5:30-8:30 PM
October 22 Thursday	Lincoln Plaza Hotel 4345 Lincoln Boulevard Oklahoma City	5:30-8:30 PM
October 31 Saturday	Shangri-La Lodge Grand Lake (Oklahoma Society of Internal Medicine)	1-4 PM

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## *Rare speech disorder*

### **Spasmodic dysphonia group now meeting monthly at OU's Keys Center**

A support group for sufferers of spasmodic dysphonia, a rare speech disorder, has been established at the University of Oklahoma Health Sciences Center in Oklahoma City.

The group meets on the third Tuesday of each month, from 6:30 to 7:30 PM, at the university's Keys Speech & Hearing Center, 825 Northeast 14th Street, Oklahoma City.

Spasmodic dysphonia is a disorder in which the vocal cords operate improperly, interfering with speech. In the most frequent of the two types — adductor spasmodic dysphonia — the vocal cords close tightly while the person is speaking, making speech extremely difficult, explained Dr Ann Owen, OU assistant professor of communication disorders and faculty sponsor of the support group. A second type — abductor spasmodic dysphonia — occurs when the vocal cords fly open during speech, releasing air, but no voiced sound.

The cause of the disorder is believed to be neurological. Speech therapy occasionally is helpful. In addition, botulinum toxin injections, which cause a

temporary paralysis of the vocal cords, have been found to be an effective treatment for some patients.

Because it is so rare, spasmodic dysphonia often goes undiagnosed or is misdiagnosed by physicians, Dr Owen said. Its victims often are led to believe they simply have a severe cold or other throat condition. Unfortunately, the nature of the disease may lead to emotional difficulties, as well as major adjustments in life-style and career.

"Spasmodic dysphonia is very debilitating," Dr Owen said. "People have lost businesses and careers because of it. Some have ended up contemplating suicide."

"There are between 13,000 and 14,000 recorded cases of spasmodic dysphonia in the US, and I believe that figure is low," Dr Owen continued. "Almost all of the people in our support group had been to countless physicians before their problem was correctly diagnosed."

For more information about the support group, call Dr Owen at (405) 271-2323. □

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## **FROM THE OSDH**

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### *Oklahoma State Department of Health*

### **Syphilis is on the increase both in Oklahoma and across the nation**



In the last decade, syphilis morbidity has increased nationwide. Rates of primary and secondary (P&S) syphilis are at their highest since the late 1940s. Syphilis demography is changing; in the early and mid-1980s,

homosexual men were predominantly affected, but their rates have since declined. In the late 1980s, however, syphilis rates have increased dramatically in heterosexual men and women, especially among African-Americans.

Oklahoma also has experienced this increase. P&S case reports increased from 113 in 1980, to 141 in 1988, to 252 in 1990 — a 79% increase in the past two years. The demographic changes in Oklahoma are similar to the national experience. By 1990, the P&S case rate among African-Americans in Oklahoma was 78.6/100,000, compared to 2.5/100,000 for whites.

This increase is not confined to Oklahoma City and Tulsa. In 1990, 100 cases were from more rural areas, a threefold increase in just four years.

Several factors have contributed to the increase in syphilis, including social disintegration, prostitution, and the exchange of sex for drugs. Crack cocaine, which is often associated with syphilis, reached Oklahoma in the late 1980s. Crack cocaine is relatively inexpensive in comparison to other forms of cocaine and is extremely addictive. In order to support their habit, many people addicted to crack exchange sex for drugs, resulting in more frequent sexual activity and multiple partners, increasing overall the risk of acquiring a sexually transmitted disease.

Congenital syphilis is also increasing in Oklahoma, from an average of 1.3 reported cases annually during the 1980s, to 8 cases in 1989, 17 in 1990, and 13 reported thus far for 1991. With early infectious

## OSDH (continued)

syphilis increasing among women, reports of congenital syphilis are expected to increase. Unlike gonorrhea, which is more common in teenagers and women in their early 20s, syphilis typically affects women in their mid- to late 20s and 30s.

Screening for syphilis is part of standard prenatal care; lack of prenatal care is the biggest risk factor for untreated maternal syphilis, and thus congenital syphilis. However, even women who receive prenatal care may be screened inadequately, since many providers still perform only an initial serologic test for syphilis (STS) and do not perform follow-up STS at delivery on women with high risk behaviors. As syphilis rates increase, the likelihood of acquiring an infection during pregnancy also increases. Therefore, routine serologic screening at delivery is often needed. In individuals with very high risk behaviors, third trimester testing also should be considered.

Many infected infants are asymptomatic at birth. Therefore, both the Centers for Disease Control (CDC) and the American Academy of Pediatrics recommend

that every infant born to a woman who has untreated or inadequately treated syphilis (now the basis for the CDC case definition of congenital syphilis) be evaluated and treated with either 10 days of parenteral penicillin or with an injection of benzathine penicillin. Penicillin is the *only* adequate — and recommended — treatment for syphilis in pregnancy, and should be followed by monthly titers to monitor the response.

Oklahoma physicians should consider routine STS screening at delivery in any patient who has continued nonmonogamous sexual activity during pregnancy, especially those with any history of illicit drug use. Screening the *mother* on admission is optimal, as this is more likely to pick up recent infection than cord blood. It also will increase the chance of the test result returning while the mother and infant are still in the hospital, allowing for prompt treatment.

Positive test results should be reported to the Oklahoma State Department of Health STD/HIV Division, telephone 405/271-4636. Case management consultation, which may include previous serologic results, is available. J

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## Noncontraceptive Benefits of Oral Contraceptives

Gilbert G. Haas, Jr., MD

Despite the fact that oral contraceptive has been the most studied medication in the history of pharmaceuticals, there is an increasing reluctance of women and physicians to utilize this extraordinarily safe drug for contraception. In fact, seventy-six percent of women in a Gallup Poll sponsored by the American College of Obstetrics and Gynecology believed that oral contraceptives carried serious health risks, and half the women believed that oral contraceptives posed a greater health risk than child bearing in non-smoking women under the age of 35. The common belief that the use of oral contraceptives must be coupled with a bittersweet dread of, is unfounded. In fact there are major non-contraceptive benefits which are associated with the use of oral contraceptives. This information must be dissipated to women/consumers by their health care providers.

Another result of public polling reveals that physicians are the source of information on oral contraceptive side effects, only 3% of the time, while the mass media are the source of information for the vast majority of women. It is unfortunate that the media has not emphasized the health benefits of oral contraceptives alongside its heavy emphasis on possible risks. For instance, the chance of death in one year for an oral contraceptive user who is a non-smoker is approximately 1 in 63,000. This compares quite favorably for the risk of hysterectomy (1:1,600), or continuing a pregnancy (1:14,300). Acknowledging that simplification of epidemiology is often fraught with inappropriate conclusions, a compilation of the hospitalizations attributed to oral contraceptive use in women between the ages of 20 and 54 in 1983 revealed that 9,425 could be attributed to oral contraceptives; while 57,980 hospitalizations were theoretically prevented by oral contraceptives.

An amalgamation of 10 case-controlled studies of the risk of ovarian cancer, revealed that the risk of cancer of the ovary is reduced by approximately 40% in "ever" users of oral contraceptives. This protective effect is increased with increasing duration of use, and the protective effect exists with even short-term use. This important benefit cannot be overstated since the death rate from ovarian cancer has not plummeted in parallel with deaths secondary to cer-

vical or endometrial cancer. In a similar vein, the risk of functional ovarian cysts is reduced 16-fold when oral contraceptives are used.

The progestin in oral contraceptives also remarkably decreases the risk of endometrial cancer by as much as 50% in "ever" users. This risk declines further with long-term use. Since the major cause of endometrial cancer, the most common form of gynecologic malignancy, is anovulation (lack of progesterone), it is not surprising that birth control pills confer effective protection.

Although there does not appear to be a decline in the incidence of breast cancer in women on the pill,

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***The benefit of  
oral contraceptives use by  
healthy nonsmoking women over 40  
may outweigh the possible risks.***

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neither does there appear to be an increased risk of breast cancer in women taking the pill. There may be a possible association between oral contraceptives and an increase in the risk of breast cancer in women under the age 35 after 8 years of oral contraceptive use, but the overall risk of breast cancer by the age 55 to 60 is not increased.

The large perspective studies evaluating the oral contraceptives on cardiovascular disease (such as the Royal College of General Practitioners case-control study in Great Britain) originally attributed an increased risk of various types of circulatory disease to the pill. However, their most recent data published in 1989, revealed that virtually 100% of the increased risk is in those women who combined oral contraceptive use with cigarette smoking, and this increased risk occurs even if less than 15 cigarettes a day are smoked. In the nonsmoking woman on the pill, there is no increased risk of cardiovascular disease. These findings prompted the United States Food and Drug Administration to agree in 1990 that "the benefit of

(continued)

## IN MEMORIAM

### 1991

Robert Love Loftin, MD	March 15
William Orville Davis, MD	March 23
Malcom E. Phelps, MD	March 26
Henry Edward Barnes, MD	April 2
Alfred Burke Hinkle, MD	April 2
Hassell Eugene Groves, MD	April 3
Joe Marion Parker, MD	April 3
Henry Clinton Smith, MD	April 4
George Louis Kaiser, MD	April 10
Robert Phillip Messinger, MD	April 10
John Norman Penrod, MD	April 19
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Edward Woodrow Ellis, MD	May 28
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Edward Tiffin Cook, Jr., MD	June 18
Arvin Craig Roberson, MD	July 15
John Berry Gilbert, MD	August 6
Frank Leo Bradley, MD	August 31
Rugie Reginald Coates, MD	September 15
James Byron Snow, MD	September 28
Howard Angus, MD	October 9
Jack Owen Alexander, MD	October 21
Roy Oliver Kelly, Jr., MD	October 22
Lowell Francis Thornton, MD	October 22
Lillian Marie Hoke, MD	October 25
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Harold Houston Jones, Jr., MD	October 27
Francis Ray First, Jr., MD	October 28
Robert W. Kahn, MD	October 30
Charles Hugh Wilson, MD	October 30
George Kellogg Stephens, MD	November 4
Weldon Keiller Haynie, MD	November 25
Samuel Richard Fryer, MD	November 30
William Thomas Snoddy, MD	December 3
Philip George Joseph, MD	December 20
Charles Patrick Kirkland, MD	December 24

### 1992

John Moore Campbell III, MD	January 24
Bruce Ratliff Hinson, MD	January 24

## Worth Repeating *(continued)*

oral contraceptives use by healthy nonsmoking women over 40 may outweigh the possible risks."

In conclusion, it can be stated that the pill is one group of the most effective contraceptives. Individual preferences will dictate the compliance of oral contraceptive users, but modern low-dose oral contraceptives are extraordinarily safe in nonsmokers. The price of a pill pack offers substantial noncontraceptive benefits in addition to effective contraception in women who utilize this method of birth control. It is paramount that physicians instruct their patients of these benefits and reverse the perception of the general public. J

### The Author

Gilbert G. Haas, Jr., MD, is professor and chief, Section of Reproductive Endocrinology and Infertility, Department of Obstetrics and Gynecology, University of Oklahoma Health Sciences Center, Oklahoma City.

## DEATHS

### John Moore Campbell III, MD 1911 - 1992

Retired general surgeon J. Moore Campbell III, MD, died January 24, 1992, in Oklahoma City. A 1936 graduate of the School of Medicine, University of Pennsylvania, he came to Oklahoma in 1939 to complete a fellowship in surgery. Thereafter he was invited to teach at the University of Oklahoma College of Medicine as an associate professor. He also had a private surgical practice, and was the first physician to do surgery at Deaconess Hospital. Later he served as chief of surgery at Deaconess.

### Bruce Ratliff Hinson, MD 1906 - 1992

OSMA Life Member Bruce R. Hinson, MD, Enid, died January 24, 1992. A native of Bono, Ark, Dr Hinson earned his medical degree at Northwestern University, Chicago, in 1932. He completed his surgical training in Enid under his father and Dr Raymond Jacobs. During World War II he served in the US Army Medical Corps in Europe. He was president of the OSMA in 1954-55 and the subject of a Leaders in Medicine article in the March 1983 of the JOURNAL. J



**The Harvard Medical Unit at Boston City Hospital: An Autobiography.** Vol. 2, Part 1: **The Peabody-Minot Tradition, 1915-1950**; Part 2: **The Castle-Finland Era, 1951-1974.** Compiled by Maxwell Finland and William B. Castle (Commonwealth Fund Publication, distributed for the Francis A. Countway Library of Medicine, Harvard Medical School). Charlottesville, Virginia: University Press of Virginia, 1983. Pp 1,441, illus, \$50.00.

In volume 1, the founding in 1923, the activities and achievements of and the termination in 1973 of the Thorndike Memorial Laboratory at the Boston City Hospital was detailed in volume one. It was part of the Harvard Medical Unit at the Boston City Hospital. Some 1,375 physicians have received some or all of their training in connection with Harvard Medical Unit at that hospital. From these, Drs Max Finland and William Castle have collected some 438 autobiographical sketches for inclusion in the second volume.

Volume 2 is divided into two parts: Part 1, *The Peabody-Minot Tradition, 1915-1950* and Part 2, *The Castle-Finland Era, 1951-1974.* The contributions thus cover the period 1915-1974. They provide a fascinating story of the daily life of house officers, their relationship with patients and other personnel of the hospital, the personalities of house staff and faculty, approaches to teaching and to medical care and many other abstract features of an academic institution.

Not the least of these contributions is the reflection of the marked changes in medical practice over the period covered.

This is a valuable and interesting historical account.

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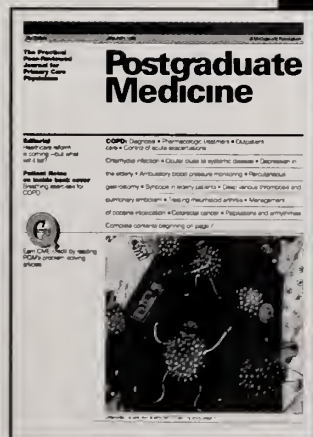


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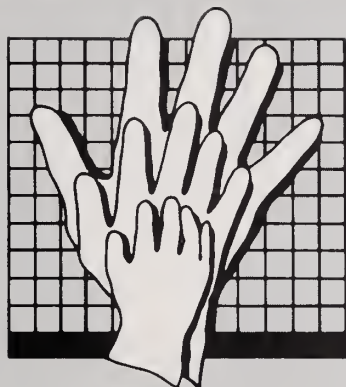
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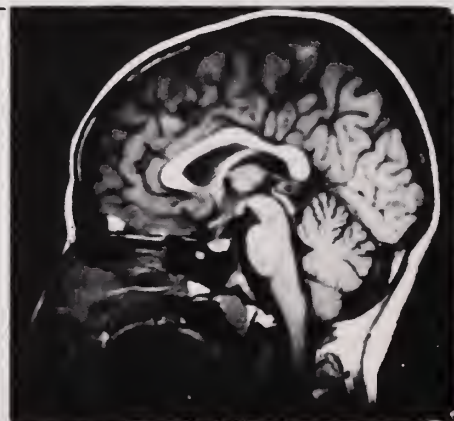


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## INSTRUCTIONS FOR AUTHORS

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### Style

All manuscripts should adhere to the style adopted by the American Medical Association as illustrated in *JAMA* and detailed in the AMA's *Manual of Style*. An abstract of 150 words or less should accompany each paper and should state (1) the exact question considered, (2) the key points of methodology and success of execution, (3) the key findings, and (4) the conclusion(s) directly supported by these findings. Footnotes, bibliographies, and legends for illustrations should be typewritten, double-spaced, on separate sheets. References are to be listed in the order of their appearance in the article.

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Illustrations other than the author's will not be accepted for publication unless accompanied by written permission from the original source. Illustrations should be labeled with the author's name and must be numbered in the order in which they are referred to in the article. The quality of all illustrations must be in keeping with the quality of the magazine.

### Reprints

Authors will receive reprint order forms from the Transcript Press, 222 East Eufaula, Norman, Oklahoma 73069, prior to publication of their articles. Other requests for reprints must be made to the Transcript Press within 30 days after publication.

### News

Readers are encouraged to submit news items of interest to Oklahoma physicians. Where dates of meetings, etc., are important, please remember that each issue closes on the first day of the *preceding* month and reaches subscribers in the latter half of the month of publication.

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## Doctor's Day 1992

Wouldn't Mrs Charles B. Almond be amazed at the advances in today's medicine. From early childhood Mrs Almond had fond memories of her family physician, whose skill and understanding endeared him to his patients as a beloved doctor and a revered friend. In 1920 she married Dr Almond and moved to Winder, Georgia. Dr Almond's busy life serving his fellow man was the guiding spirit that influenced her idea for a doctor's day. She watched the charity, courage, love, and sacrifice in her husband's life, and she became convinced that medicine was the greatest profession on earth. This respect and appreciation for all that doctors do for humanity inspired her to present to her local auxiliary the idea of a day to honor physicians. The suggestion met with immediate approval, and in 1935 her idea was presented to the Southern Medical Association. Since then, Doctor's Day has become an integral part of the Southern Medical Association. Now this idea is actively promoted by the American Medical Association Auxiliary.

March 30th was the date chosen to observe Doctor's Day. On this date in 1842 Dr Crawford Williamson

Long administered sulfuric ether in a surgical operation for the first time. Last year, a proclamation was passed both in the Senate and the House of Representatives and signed by President Bush, which officially establishes March 30 as Doctor's Day.

In communities across our nation, auxiliaries, hospitals, and health workers will honor our doctors who give of their talents and will remember those who have gone before in this noble profession. Doctor's Day is observed in many different ways. Scholarships or loan funds may be offered to medical students, and equipment may be donated to hospitals. Auxiliaries may sponsor blood drives, and honor retired or retiring physicians.

As we honor our doctors let us not forget the sacrifices that their families have made through the years. Their children and spouses, who missed them at the all important piano recitals or birthdays or anniversaries, are also to be honored.

—Maggie Hubner  
OSMAA Doctor's Day Chair

■ **The Oklahoma Indigent Health Care Act of 1987** allows taxpayers receiving a state income tax refund to contribute part of their refund to the Oklahoma Indigent Health Care Fund, which helps fund clinics that provide health care services to those who cannot pay. Supporting the project this year are the Oklahoma State Medical Association, Oklahoma Dental Association, Oklahoma Hospital Association, Oklahoma Osteopathic Association, Oklahoma County Medical Society, and Tulsa County Medical Society. If you are going to receive a state tax refund and would like to contribute, simply check line 55 on Form 511 or line 18 on the short form 511EZ.

■ **Recently installed 1992 officers of the Oklahoma County Medical Society** are Carol B. Imes, MD, president; Roland A. Walters, MD, president-elect; R. Timothy Coussons, MD, vice-president; and Philip Mosca, MD, secretary-treasurer. Serving as directors for 1992 are M. DeWayne Andrews, MD; Raymond L. Cornelison, MD; Robert W. Daniels, MD; Timothy L. Grode, MD; Richard Herlihy MD; Alice McInnis Hughes, MD; Billy J. Matter, MD; Joseph D. Parkhurst, MD; and Wayne L. Wasemiller, MD.

■ ***Estimated Changes in Payments to Physicians Under Medicare*** is the title of a new book now available from the American Medical Association. According to the publication, about half the nation's physicians will see their Medicare payments decrease as a result of reform legislation, while the other half will experience gains; in volume of dollars, however, the losses will be greater than the gains. The book is designed to help physicians determine how the final rule will affect their individual practices. It gives estimates by specialty and by location. Copies of the publication are \$30 for AMA members and \$50 for nonmembers. To order, call the AMA Member Service Center. (800) 262-3211.

■ **The Tulsa County Medical Society recently installed its officers for 1992.** Serving TCMS this year are David L. Harper, MD, president; Douglas C. Hubner, MD, president-elect; and Boyd O. Whitlock, MD, vice-president. Elected to three-year terms on the TCMS Board of Directors are John Minielly, MD; Frank Phelps, MD; and Richard Slagle, MD. Retiring president G. Lance Miller, MD, will serve a one-year

term on the board. Elected to the Board of Censors were Lynn E. Frame, MD; John B. Forrest, MD; and William A. Geggen, MD.

■ **Ralph G. Ganick, MD, a hematologist and oncologist** with the Oklahoma City Clinic, has been named recipient of that organization's Blesh-Rucks Award for 1991. The award recognizes physicians who show understanding, ability, and devotion to work, and is named for two of the clinic's founders, Dr Abraham Blesh and Dr W.W. Rucks, Sr. Dr Ganick has been with the clinic since 1978. Prior to that he was a clinical instructor at the OU College of Medicine.

■ **Richard Green, author of the JOURNAL's Leaders in Medicine biographies** since 1985, has been honored again for his work in this series. On January 17, two of his Leaders profiles won awards from the Oklahoma Chapter of the Society of Professional Journalists. Earning first place in the statewide periodical feature writing category was Green's June 1990 story on Jess D. Herrmann, MD. Second place in the same category went to his January 1991 biography of Hays R. Yandell, MD. Next month the JOURNAL will feature yet another article in this prize-winning series.

■ **Gale A. McCarty, MD, FACP, FACR, was incorrectly identified by gender** in the profile accompanying her invited review "Autoantibodies to Phospholipids — New Looks at Old Diseases — A Primer for Physicians (Feb 92 JOURNAL). An Associate Professor of Medicine in the Arthritis/Immunology Program headed by Morris Reichlin, MD, she started and developed the aPL Lab subsection in Dr Reichlin's Clinical Immunology Lab at OMRF, and manages patients with these syndromes in her private rheumatology practice at OMH. She was recently elected to the Southern Society for Clinical Investigation, and will chair the Plenary Session on Therapeutics at the Vth International aPL Symposium in San Antonio, Tex, September 9–13, 1992. She is one of only 15 women rheumatologists/immunologists who have been elected to regional and/or national committee memberships and offices in the American College of Rheumatology. □



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#### BRIEF SUMMARY

**Contraindications:** Severe LV dysfunction (see *Warnings*), hypotension (systolic pressure < 90 mm Hg) or cardiogenic shock, sick sinus syndrome (if no pacemaker is present), 2nd- or 3rd-degree AV block (if no pacemaker is present), atrial flutter/fibrillation with an accessory bypass tract (eg, WPW or LGL syndromes), hypersensitivity to verapamil.

**Warnings:** Verapamil should be avoided in patients with severe LV dysfunction (eg, ejection fraction < 30%) or moderate to severe symptoms of cardiac failure and in patients with any degree of ventricular dysfunction if they are receiving a beta-blocker. Control milder heart failure with optimum digitalization and/or diuretics before Calan SR is used. Verapamil may occasionally produce hypotension. Elevations of liver enzymes have been reported. Several cases have been demonstrated to be produced by verapamil. Periodic monitoring of liver function in patients on verapamil is prudent. Some patients with paroxysmal and/or chronic atrial flutter/fibrillation and an accessory AV pathway (eg, WPW or LGL syndromes) have developed an increased antegrade conduction across the accessory pathway bypassing the AV node, producing a very rapid ventricular response or ventricular fibrillation after receiving I.V. verapamil (or digitalis). Because of this risk, oral verapamil is contraindicated in such patients. AV block may occur (2nd- and 3rd-degree, 0.8%). Development of marked 1st-degree block or progression to 2nd- or 3rd-degree block requires reduction in dosage or, rarely, discontinuation and institution of appropriate therapy. Sinus bradycardia, 2nd-degree AV block, sinus arrest, pulmonary edema and/or severe hypotension were seen in some critically ill patients with hypertrophic cardiomyopathy who were treated with verapamil.

**Precautions:** Verapamil should be given cautiously to patients with impaired hepatic function (in severe dysfunction use about 30% of the normal dose) or impaired renal function, and patients should be monitored for abnormal prolongation of the PR interval or other signs of overdosage. Verapamil may decrease neuromuscular transmission in patients with Duchenne's muscular dystrophy and may prolong recovery from the neuromuscular blocking agent vecuronium. It may be necessary to decrease verapamil dosage in patients with attenuated neuromuscular transmission. Combined therapy with beta-adrenergic blockers and verapamil may result in additive negative effects on heart rate, atrioventricular conduction and/or cardiac contractility; there have been reports of excessive bradycardia and AV block, including complete heart block. The risks of such combined therapy may outweigh the benefits. The combination should be used only with caution and close monitoring. Decreased metoprolol and propranolol clearance may occur when either drug is administered concomitantly with verapamil. A variable effect has been seen with combined use of atenolol. Chronic verapamil treatment can increase serum digoxin levels by 50% to 75% during the first week of therapy, which can result in digitalis toxicity. In patients with hepatic cirrhosis, verapamil may reduce total body clearance and extrarenal clearance of digoxin. The digoxin dose should be reduced when verapamil is given, and the patient carefully monitored. Verapamil will usually have an additive effect in patients receiving blood-pressure-lowering agents. Disopyramide should not be given within 48 hours before or 24 hours after verapamil administration. Concomitant use of flecainide and verapamil may have additive effects on myocardial contractility, AV conduction, and repolarization. Combined verapamil and quinidine therapy in patients with hypertrophic cardiomyopathy should be avoided, since significant hypotension may result. Concomitant use of lithium and verapamil may result in a lowering of serum lithium levels or increased sensitivity to lithium. Patients receiving both drugs must be monitored carefully. Verapamil may increase carbamazepine concentrations during combined use. Rifampin may reduce verapamil bioavailability. Phenobarbital may increase verapamil clearance. Verapamil may increase serum levels of cyclosporin. Verapamil may inhibit the clearance and increase the plasma levels of theophylline. Concomitant use of inhalation anesthetics and calcium antagonists needs careful titration to avoid excessive cardiovascular depression. Verapamil may potentiate the activity of neuromuscular blocking agents (curare-like and depolarizing); dosage reduction may be required. There was no evidence of a carcinogenic potential of verapamil administered to rats for 2 years. A study in rats did not suggest a tumorigenic potential, and verapamil was not mutagenic in the Ames test. Pregnancy Category C. There are no adequate and well-controlled studies in pregnant women. This drug should be used during pregnancy, labor, and delivery only if clearly needed. Verapamil is excreted in breast milk; therefore, nursing should be discontinued during verapamil use.

**Adverse Reactions:** Constipation (7.3%), dizziness (3.3%), nausea (2.7%), hypotension (2.5%), headache (2.2%), edema (1.9%), CHF, pulmonary edema (1.8%), fatigue (1.7%), dyspnea (1.4%), bradycardia: HR < 50/min (1.4%), AV block: total 1°, 2°, 3° (1.2%), 2° and 3° (0.8%), rash (1.2%), flushing (0.6%), elevated liver enzymes, reversible non-obstructive paralytic ileus. The following reactions, reported in 1.0% or less of patients, occurred under conditions where a causal relationship is uncertain: angina pectoris, atrioventricular dissociation, chest pain, claudication, myocardial infarction, palpitations, purpura (vasculitis), syncope, diarrhea, dry mouth, gastrointestinal distress, gingival hyperplasia, ecchymosis or bruising, cerebrovascular accident, confusion, equilibrium disorders, insomnia, muscle cramps, paresthesia, psychotic symptoms, shakiness, somnolence, arthralgia and rash, exanthema, hair loss, hyperkeratosis, macules, sweating, urticaria, Stevens-Johnson syndrome, erythema multiforme, blurred vision, gynecomastia, galactorrhea/hyperprolactinemia, increased urination, spotty menstruation, impotence.

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\* See DOSAGE AND ADMINISTRATION section of prescribing information.

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‡ In some patients, the antihypertensive effect may diminish toward the end of the once-daily dosing interval. In such patients, an increase in dosage or twice-daily administration may be warranted.

ACCUPRIL is available in 10, 20, and 40 mg tablets. Usual initial starting dosage is 10 mg once daily.

ACCUPRIL is contraindicated in patients who are hypersensitive to this product and in patients with a history of angioedema related to previous treatment with an ACE inhibitor.

Please see brief summary of prescribing information on following page.





## Accupril® (Quinapril Hydrochloride Tablets)

Before prescribing, please see full prescribing information. A brief summary follows.

### INDICATIONS AND USAGE

ACCUPRIL is indicated for the treatment of hypertension. It may be used alone or in combination with thiazide diuretics. In using ACCUPRIL, consideration should be given to the fact that another angiotensin-converting enzyme (ACE) inhibitor, captopril, has caused agranulocytosis, particularly in patients with renal impairment or collagen vascular disease. Available data are insufficient to show that ACCUPRIL does not have a similar risk (see WARNINGS).

### CONTRAINDICATIONS

ACCUPRIL is contraindicated in patients who are hypersensitive to this product and in patients with a history of angioedema related to previous treatment with an ACE inhibitor.

### WARNINGS

**Angioedema:** Angioedema of the face, extremities, lips, tongue, glottis, and larynx has been reported in patients treated with ACE inhibitors and has been seen in 0.1% of patients receiving ACCUPRIL. Angioedema associated with laryngeal edema can be fatal. If laryngeal stridor or angioedema of the face, tongue, or glottis occurs, treatment with ACCUPRIL should be discontinued immediately; the patient treated in accordance with accepted medical care, and carefully observed until the swelling disappears. In instances where swelling is confined to the face and lips, the condition generally resolves without treatment; antihistamines may be useful in relieving symptoms.

Where there is involvement of the tongue, glottis, or larynx likely to cause airway obstruction, emergency therapy including, but not limited to, subcutaneous epinephrine solution 1:1000 (0.3 to 0.5 mL) should be promptly administered (see ADVERSE REACTIONS).

**Hypotension:** Symptomatic hypotension was rarely seen in uncomplicated hypertensive patients treated with ACCUPRIL but, as with other ACE inhibitors, it is a possible consequence of therapy in salt/volume depleted patients, such as those previously treated with diuretics or dietary salt restriction or who are on dialysis (see PRECAUTIONS, DRUG INTERACTIONS, and ADVERSE REACTIONS). In controlled studies, syncope was observed in 0.4% of patients (N=3203); this incidence was similar to that observed for captopril (1%) and enalapril (0.6%).

In patients with concomitant congestive heart failure, with or without associated renal insufficiency, ACE inhibitor therapy may cause excessive hypotension, which may be associated with oliguria or azotemia and, rarely, with acute renal failure and death. In such patients, ACCUPRIL therapy should be started at the recommended dose under close medical supervision. These patients should be followed closely for the first 2 weeks of treatment and whenever the dosage of antihypertensive medication is increased (see DOSAGE AND ADMINISTRATION).

If symptomatic hypotension occurs, the patient should be placed in the supine position and, if necessary, normal saline may be administered intravenously. A transient hypotensive response is not a contraindication to further doses; however, lower doses of ACCUPRIL or reduced concomitant diuretic therapy should be considered.

**Neutropenia/Agranulocytosis:** Another ACE inhibitor, captopril, has been shown to cause agranulocytosis and bone marrow depression rarely in patients with uncomplicated hypertension, but more frequently in patients with renal impairment, especially if they also have a collagen vascular disease such as systemic lupus erythematosus or scleroderma. Agranulocytosis did occur during ACCUPRIL treatment in one patient with a history of neutropenia during previous captopril therapy. Available data from clinical trials of ACCUPRIL are insufficient to show that, in patients without prior reactions to other ACE inhibitors, ACCUPRIL does not cause agranulocytosis at similar rates. As with other ACE inhibitors, periodic monitoring of white blood cell counts in patients with collagen vascular disease and/or renal disease should be considered.

**Fetal/Neonatal morbidity and mortality:** ACE inhibitors, including ACCUPRIL, can cause fetal and neonatal morbidity and mortality when administered to pregnant women.

When ACE inhibitors have been used during the second and third trimesters of pregnancy, there have been reports of hypotension, renal failure, skull hypoplasia, and death. Oligohydramnios has also been reported, presumably resulting from decreased fetal renal function; oligohydramnios has been associated with fetal limb contractures, craniofacial deformities, hypoplastic lung development, and intrauterine growth retardation.

Prematurity and patent ductus arteriosus have been reported, although it is not clear whether these occurrences were due to the ACE-inhibitor exposure or to the mother's underlying disease. It is not known whether exposure limited to the first trimester can adversely affect fetal outcome.

A patient who becomes pregnant while taking ACE inhibitors, or who takes ACE inhibitors when already pregnant, should be apprised of the potential hazard to her fetus. If she continues to receive ACE inhibitors during the second or third trimester of pregnancy, frequent ultrasound examinations should be performed to look for oligohydramnios. When oligohydramnios is found, ACE inhibitors should generally be discontinued.

Infants with histories of in utero exposure to ACE inhibitors should be closely observed for hypotension, oliguria, and hyperkalemia. If oliguria occurs, attention should be directed toward support of blood pressure and renal perfusion. Hemodialysis and peritoneal dialysis have little effect on the elimination of quinapril and quinaprilat.

No fetotoxic or teratogenic effects were observed in rats at quinapril doses as high as 300 mg/kg/day (180 and 30 times the maximum daily human dose when based on mg/kg and mg/m<sup>2</sup>, respectively), despite maternal toxicity at 150 mg/kg/day. Tested later in gestation and during lactation, reduced offspring body weight was seen at  $\geq 25$  mg/kg/day, and changes in renal histology (juxtaglomerular cell hypertrophy, tubular/pelvic dilation, glomerulosclerosis) were observed both in dams and offspring treated with 150 mg/kg/day. Quinapril was not teratogenic in the rabbit; however, as noted with other ACE inhibitors, maternal toxicity and embryotoxicity were seen in some rabbits at quinapril doses as low as 0.5 mg/kg/day (one time the recommended human dose) and 1.0 mg/kg/day, respectively.

### PRECAUTIONS

#### General

**Impaired renal function:** As a consequence of inhibiting the renin-angiotensin-aldosterone system, changes in renal function may be anticipated in susceptible individuals. In patients with severe heart failure whose renal function may depend on the activity of the renin-angiotensin-aldosterone system, treatment with ACE inhibitors, including ACCUPRIL, may be associated with oliguria and/or progressive azotemia and rarely acute renal failure and/or death.

In clinical studies in hypertensive patients with unilateral or bilateral renal artery stenosis, increases in blood urea nitrogen and serum creatinine have been observed in some patients following ACE inhibitor therapy. These increases were almost always reversible upon discontinuation of the ACE inhibitor and/or diuretic therapy. In such patients, renal function should be monitored during the first few weeks of therapy.

Some hypertensive patients with no apparent preexisting renal vascular disease have developed increases in blood urea and serum creatinine, usually minor and transient, especially when ACCUPRIL has been given concomitantly with a diuretic. This is more likely to occur in patients with preexisting renal impairment. Dosage reduction and/or discontinuation of any diuretic and/or ACCUPRIL may be required.

**Evaluation of hypertensive patients should always include assessment of renal function** (see DOSAGE AND ADMINISTRATION).

**Hyperkalemia and potassium-sparing diuretics:** In clinical trials, hyperkalemia (serum potassium  $\geq 5.8$  mmol/L) occurred in approximately 2% of patients receiving ACCUPRIL. In most cases, elevated serum potassium levels were isolated values which resolved despite continued therapy. Less than 0.1% of patients discontinued therapy due to hyperkalemia. Risk factors for the development of hyperkalemia include renal insufficiency, diabetes mellitus, and the concomitant use of potassium-sparing diuretics, potassium supplements, and/or potassium-containing salt substitutes, which should be used cautiously, if at all, with ACCUPRIL (see PRECAUTIONS, Drug Interactions).

**Surgery/anesthesia:** In patients undergoing major surgery or during anesthesia with agents that produce hypotension, ACCUPRIL will block angiotensin II formation secondary to compensatory renin release. If hypotension occurs and is considered to be due to this mechanism, it can be corrected by volume expansion.

#### Information for Patients

**Angioedema:** Angioedema, including laryngeal edema, can occur with treatment with ACE inhibitors, especially following the first dose. Patients should be so advised and told to report immediately any signs or symptoms suggesting angioedema (swelling of the face, extremities, eyes, lips, tongue, difficulty in swallowing or breathing) and to stop taking the drug until they have consulted with their physician (see WARNINGS).

**Symptomatic hypotension:** Patients should be cautioned that lightheadedness can occur, especially during the first few days of ACCUPRIL therapy, and that it should be reported to a physician. If actual syncope occurs, patients should be told to not take the drug until they have consulted with their physician (see WARNINGS).

All patients should be cautioned that inadequate fluid intake or excessive perspiration, diarrhea, or vomiting can lead to an excessive fall in blood pressure because of reduction in fluid volume, with the same consequences of lightheadedness and possible syncope.

Patients planning to undergo any surgery and/or anesthesia should be told to inform their physician that they are taking an ACE inhibitor.

**Hyperkalemia:** Patients should be told not to use potassium supplements or salt substitutes containing potassium without consulting their physician (see PRECAUTIONS).

## Accupril® (Quinapril Hydrochloride Tablets)

**Neutropenia:** Patients should be told to report promptly any indication of infection (eg, sore throat, fever) which could be a sign of neutropenia.

**NOTE:** As with many other drugs, certain advice to patients being treated with ACCUPRIL is warranted. This information is intended to aid in the safe and effective use of this medication. It is not a disclosure of all possible adverse or intended effects.

### Drug Interactions

**Concomitant diuretic therapy:** As with other ACE inhibitors, patients on diuretics, especially those on recently instituted diuretic therapy, may occasionally experience an excessive reduction of blood pressure after initiation of therapy with ACCUPRIL. The possibility of hypotensive effects with ACCUPRIL may be minimized by either discontinuing the diuretic or cautiously increasing salt intake prior to initiation of treatment with ACCUPRIL. If it is not possible to discontinue the diuretic, the starting dose of quinapril should be reduced (see DOSAGE AND ADMINISTRATION).

**Agents increasing serum potassium:** Quinapril can attenuate potassium loss caused by thiazide diuretics and increase serum potassium when used alone. If concomitant therapy of ACCUPRIL with potassium-sparing diuretics (eg, spironolactone, triamterene, or amiloride), potassium supplements, or potassium-containing salt substitutes is indicated, they should be used with caution along with appropriate monitoring of serum potassium (see PRECAUTIONS).

**Tetracycline and other drugs that interact with magnesium:** Simultaneous administration of tetracycline with ACCUPRIL reduced the absorption of tetracycline by approximately 28% to 37%, possibly due to the high magnesium content in ACCUPRIL tablets. This interaction should be considered if coprescribing ACCUPRIL and tetracycline or other drugs that interact with magnesium.

**Lithium:** Increased serum lithium levels and symptoms of lithium toxicity have been reported in patients receiving concomitant lithium and ACE inhibitor therapy. These drugs should be co-administered with caution, and frequent monitoring of serum lithium levels is recommended. If a diuretic is also used, it may increase the risk of lithium toxicity.

**Other agents:** Drug interaction studies of ACCUPRIL with other agents showed:

- Multiple dose therapy with propranolol or cimetidine has no effect on the pharmacokinetics of single doses of ACCUPRIL.
- The anticoagulant effect of a single dose of warfarin (measured by prothrombin time) was not significantly changed by quinapril coadministration twice-daily.
- ACCUPRIL treatment did not affect the pharmacokinetics of digoxin.
- No pharmacokinetic interaction was observed when single doses of ACCUPRIL and hydrochlorothiazide were administered concomitantly.

### Carcinogenesis, Mutagenesis, Impairment of Fertility

Quinapril hydrochloride was not carcinogenic in mice or rats when given in doses up to 75 or 100 mg/kg/day (50 to 60 times the maximum human daily dose, respectively) on a mg/kg basis and 3.8 to 10 times the maximum human daily dose when based on a mg/m<sup>2</sup> basis) for 104 weeks. Female rats given the highest dose level had an increased incidence of mesenteric lymph node hemangiomas and skin/subcutaneous lipomas. Neither quinapril nor quinaprilat were mutagenic in the Ames bacterial assay with or without metabolic activation. Quinapril was also negative in the following genetic toxicology studies: *in vitro* mammalian cell point mutation, sister chromatid exchange in cultured mammalian cells, micronucleus test with mice, *in vitro* chromosome aberration with V79 cultured lung cells, and in an *in vivo* cytogenetic study with rat bone marrow. There were no adverse effects on fertility or reproduction in rats at doses up to 100 mg/kg/day (60 and 10 times the maximum daily human dose when based on mg/kg and mg/m<sup>2</sup>, respectively).

#### Pregnancy

**Pregnancy Category D:** See WARNINGS, Fetal/Neonatal morbidity and mortality.

#### Nursing Mothers

It is not known if quinapril or its metabolites are secreted in human milk. Quinapril is secreted to a limited extent, however, in milk of lactating rats (5% or less of the plasma drug concentration was found in rat milk). Because many drugs are secreted in human milk, caution should be exercised when ACCUPRIL is given to a nursing mother.

#### Geriatric Use

Elderly patients exhibited increased area under the plasma concentration time curve (AUC) and peak levels for quinapril compared to values observed in younger patients; this appeared to relate to decreased renal function rather than to age itself. In controlled and uncontrolled studies of ACCUPRIL where 918 (21%) patients were 65 years and older, no overall differences in effectiveness or safety were observed between older and younger patients. However, greater sensitivity of some older individual patients cannot be ruled out.

#### Pediatric Use

The safety and effectiveness of ACCUPRIL in children have not been established.

### ADVERSE REACTIONS

ACCUPRIL has been evaluated for safety in 4960 subjects and patients. Of these, 3203 patients, including 655 elderly patients, participated in controlled clinical trials. ACCUPRIL has been evaluated for long-term safety in over 1400 patients treated for 1 year or more.

Adverse experiences were usually mild and transient.

Discontinuation of therapy because of adverse events was required in 4.7% of patients treated with ACCUPRIL in placebo-controlled hypertension trials.

Adverse experiences probably or possibly related to therapy or of unknown relationship to therapy occurring in 1% or more of the 1563 patients in placebo-controlled hypertension trials who were treated with ACCUPRIL are shown below.

#### Adverse Events in Placebo-Controlled Trials

	ACCUPRIL (N = 1563) Incidence (Discontinuation)	Placebo (N = 579) Incidence (Discontinuation)
Headache	5.6 (0.7)	10.9 (0.7)
Dizziness	3.9 (0.8)	2.6 (0.2)
Fatigue	2.6 (0.3)	1.0
Coughing	2.0 (0.5)	0.0
Nausea/Vomiting	1.4 (0.3)	1.9 (0.2)
Abdominal Pain	1.0 (0.2)	0.7

Clinical adverse experiences probably or possibly related, or of uncertain relationship to therapy, occurring in 0.5% to 1.0% (except as noted) of the patients treated with ACCUPRIL (with or without concomitant diuretic) in controlled or uncontrolled trials (N=4397) and less frequent, clinically significant events seen in clinical trials or post-marketing experience (the rarer events are in italics) include (listed by body system):

**General:** back pain, malaise

**Cardiovascular:** palpitation, vasodilation, tachycardia, heart failure, hyperkalemia, myocardial infarction, cerebrovascular accident, hypertensive crisis, angina pectoris, orthostatic hypotension, cardiac rhythm disturbances

**Gastrointestinal:** dry mouth or throat, constipation, gas/flatulence, hematemesis, pancreatitis, abnormal liver function tests

**Nervous/Psychiatric:** somnolence, vertigo, syncope, nervousness, depression

**Integumentary:** increased sweating, pruritus, exfoliative dermatitis, photosensitivity reaction

**Urogenital:** acute renal failure

**Other:** amblyopia, pharyngitis, sinusitis, bronchitis, agranulocytosis, thrombocytopenia

**Angioedema:** angioedema has been reported in patients receiving ACCUPRIL (0.1%). Angioedema associated with laryngeal edema may be fatal. If angioedema of the face, extremities, lips, tongue, glottis, and/or larynx occurs, treatment with ACCUPRIL should be discontinued and appropriate therapy instituted immediately. (See WARNINGS.)

#### Clinical Laboratory Test Findings

**Hematology:** (See WARNINGS)

**Hyperkalemia:** (See PRECAUTIONS)

**Creatinine and blood urea nitrogen:** Increases ( $>1.25$  times the upper limit of normal) in serum creatinine and blood urea nitrogen were observed in 2% and 2%, respectively, of patients treated with ACCUPRIL alone. Increases are more likely to occur in patients receiving concomitant diuretic therapy than in those on ACCUPRIL alone. These increases often remit on continued therapy.

\* In some patients, the antihypertensive effect may diminish toward the end of the once-daily dosing interval. In such patients, an increase in dosage or twice-daily administration may be warranted.



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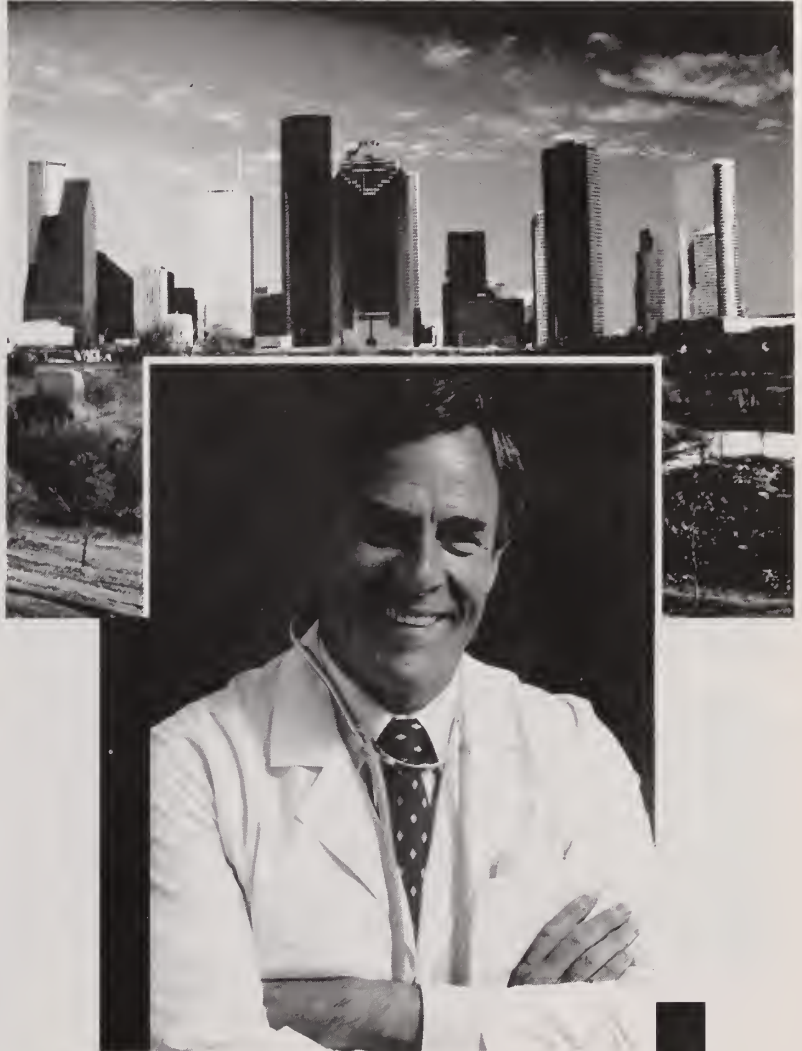
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**ABOUT THE COVER**

Robert G. Tompkins, MD, Tulsa, is honored this month as a Leader in Medicine. Story on page 180.

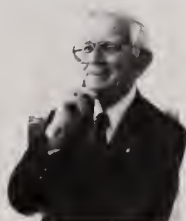
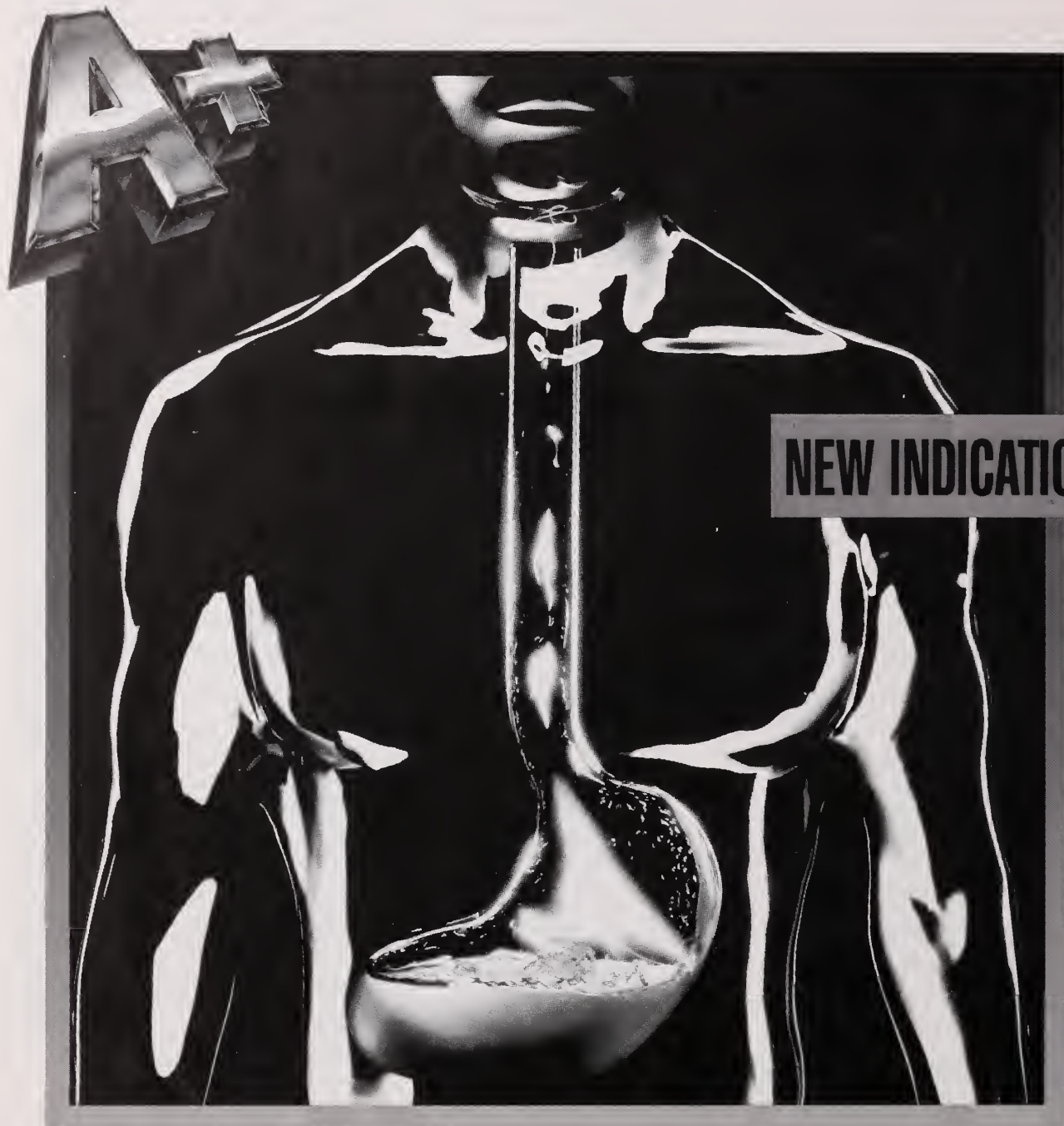


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2. *Maintenance therapy*—for healed duodenal ulcer patients at a dosage of 150 mg h.s. at bedtime. The consequences of therapy with Axid for longer than 1 year are not known.

3. *Gastroesophageal reflux disease (GERD)*—for up to 12 weeks of treatment of endoscopically diagnosed esophagitis, including erosive and ulcerative esophagitis, and associated heartburn at a dosage of 150 mg b.i.d.

**Contraindication:** Known hypersensitivity to the drug. Because cross sensitivity in this class of compounds has been observed, H<sub>2</sub>-receptor antagonists, including Axid, should not be administered to patients with a history of hypersensitivity to other H<sub>2</sub>-receptor antagonists.

**Precautions:** *General*—1. Symptomatic response to nizatidine therapy does not preclude the presence of gastric malignancy.

2. Dosage should be reduced in patients with moderate to severe renal insufficiency.

3. In patients with normal renal function and uncomplicated hepatic dysfunction, the disposition of nizatidine is similar to that in normal subjects.

**Laboratory Tests**—False-positive tests for urobilinogen with Multistix<sup>®</sup> may occur during therapy.

**Drug Interactions**—No interactions have been observed with theophylline, chlordiazepoxide, lorazepam, lidocaine, phenytoin, and warfarin. Axid does not inhibit the cytochrome P-450 enzyme system; therefore, drug interactions mediated by inhibition of hepatic metabolism are not expected to occur. In patients given very high doses (3,900 mg) of aspirin daily, increased serum salicylate levels were seen when nizatidine, 150 mg b.i.d., was administered concurrently.

**Carcinogenesis, Mutagenesis, Impairment of Fertility**—A 2-year oral carcinogenicity study in rats with doses as high as 500 mg/kg/day (about 80 times the recommended daily therapeutic dose) showed no evidence of a carcinogenic effect. There was a dose-related increase in the density of enterochromaffin-like (ECL) cells in the gastric oxyntic mucosa. In a 2-year study in mice, there was no evidence of a carcinogenic effect in male mice, although hyperplastic nodules of the liver were increased in the high-dose males as compared with placebo. Female mice given the high dose of Axid (2,000 mg/kg/day, about 330 times the human dose) showed marginally statistically significant increases in hepatic carcinoma and hepatic nodular hyperplasia with no numerical increase seen in any of the other dose groups. The rate of hepatic carcinoma in the high-dose animals was within the historical control limits seen for the strain of mice used. The female mice were given a dose larger than the maximum tolerated dose, as indicated by excessive (30%) weight decrement as compared with concurrent controls and evidence of mild liver injury (transaminase elevations). The occurrence of a marginal finding at high dose only in animals given an excessive and somewhat hepatotoxic dose, with no evidence of a carcinogenic effect in rats, male mice, and female mice (given up to 360 mg/kg/day, about 60 times the human dose), and a negative mutagenicity battery are not considered evidence of a carcinogenic potential for Axid.

Axid was not mutagenic in a battery of tests performed to evaluate its potential genetic toxicity, including bacterial mutation tests, unscheduled DNA synthesis, sister chromatid exchange, mouse lymphoma assay, chromosome aberration tests, and a micronucleus test.

In a 2-generation, perinatal and postnatal fertility study in rats, doses of nizatidine up to 650 mg/kg/day produced no adverse effects on the reproductive performance of parental animals or their progeny.

**Pregnancy—Teratogenic Effects—Pregnancy Category C**—Oral reproduction studies in rats at doses up to 300 times the human dose and in Dutch Belted rabbits at doses up to 55 times the human dose revealed no evidence of impaired fertility or teratogenic effect, but, at a dose equivalent to 300 times the human dose, treated rabbits had abortions, decreased number of live fetuses, and depressed fetal weights. On intravenous administration to pregnant New Zealand White rabbits, nizatidine at 20 mg/kg produced cardiac enlargement, coarctation of the aortic arch, and cutaneous edema in 1 fetus, and at 50 mg/kg, it produced ventricular anomaly, distended abdomen, spina bifida, hydrocephaly, and enlarged heart in 1 fetus. There are, however, no adequate and well-controlled studies in pregnant women. It is also not known whether nizatidine can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. Nizatidine should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

**Nursing Mothers**—Studies in lactating women have shown that 0.1% of an oral dose is secreted in human milk in proportion to plasma concentrations. Because of growth depression in pups reared by treated lactating rats, a decision should be made whether to discontinue nursing of the drug, taking into account the importance of the drug to the mother.

**Pediatric Use**—Safety and effectiveness in children have not been established.

**Use in Elderly Patients**—Healing rates in elderly patients were similar to those in younger age groups as were the rates of adverse events and laboratory test abnormalities. Age alone may not be an important factor in the disposition of nizatidine. Elderly patients may have reduced renal function.

**Adverse Reactions:** Worldwide, controlled clinical trials included over 6,000 patients given nizatidine in studies of varying durations. Placebo-controlled trials in the United States and Canada included over 2,600 patients given nizatidine and over 1,700 given placebo. Among the adverse events in these placebo-controlled trials, only anemia (0.2% vs 0%) and urticaria (0.5% vs 0.1%) were significantly more common in the nizatidine group. Of the adverse events that occurred at a frequency of 1% or more, there was no statistically significant difference between Axid and placebo in the incidence of any of these events (see package insert for complete information).

A variety of less common events were also reported; it was not possible to determine whether these were caused by nizatidine.

**Hepatic**—Hepatocellular injury (elevated liver enzyme tests or alkaline phosphatase) possibly or probably related to nizatidine occurred in some patients. In some cases, there was marked elevation (>500 IU/L) in SGOT or SGPT and, in a single instance, SGPT was >2,000 IU/L. The incidence of elevated liver enzymes overall and elevations of up to 3 times the upper limit of normal, however, did not significantly differ from that in placebo patients. All abnormalities were reversible after discontinuation of Axid. Since market introduction, hepatitis and jaundice have been reported. Rare cases of cholestatic or mixed hepatocellular and cholestatic injury with jaundice have been reported with reversal of the abnormalities after discontinuation of Axid.

**Cardiovascular**—In clinical pharmacology studies, short episodes of asymptomatic ventricular tachycardia occurred in 2 individuals administered Axid and in 3 untreated subjects.

**CNS**—Rare cases of reversible mental confusion have been reported.

**Endocrine**—Clinical pharmacology studies and controlled clinical trials showed no evidence of anti-androgenic activity due to nizatidine. Impotence and decreased libido were reported with similar frequency by patients on nizatidine and those on placebo. Gynecomastia has been reported rarely.

**Hematologic**—Anemia was reported significantly more frequently in nizatidine than in placebo-treated patients. Fatal thrombocytopenia was reported in a patient treated with nizatidine and another H<sub>2</sub>-receptor antagonist. This patient had previously experienced thrombocytopenia while taking other drugs. Rare cases of thrombocytopenic purpura have been reported.

**Integumental**—Urticaria was reported significantly more frequently in nizatidine- than in placebo-treated patients. Rash and exfoliative dermatitis were also reported.

**Hypersensitivity**—As with other H<sub>2</sub>-receptor antagonists, rare cases of anaphylaxis following nizatidine administration have been reported. Rare episodes of hypersensitivity reactions (eg, bronchospasm, laryngeal edema, rash, and eosinophilia) have been reported.

**Other**—Hyperuricemia unassociated with gout or nephrolithiasis was reported. Eosinophilia, fever, and nausea related to nizatidine have been reported.

**Overdosage:** Overdoses of Axid have been reported rarely. If overdosage occurs, activated charcoal, emesis, or lavage should be considered along with clinical monitoring and supportive therapy. The ability of hemodialysis to remove nizatidine from the body has not been conclusively demonstrated, however, due to its large volume of distribution, nizatidine is not expected to be efficiently removed from the body by this method. PV 2093 AMP

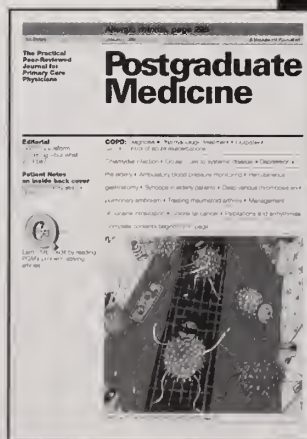
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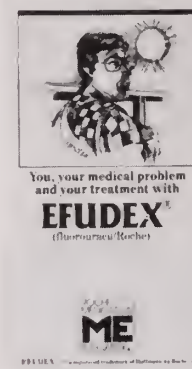
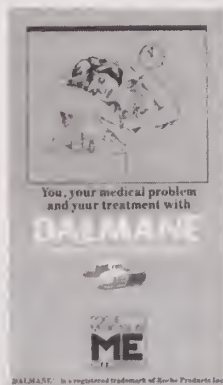
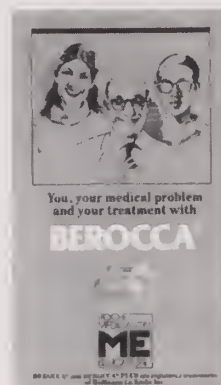
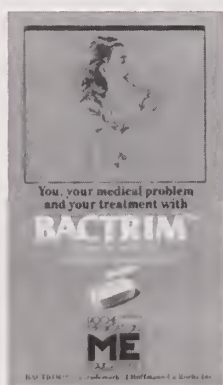
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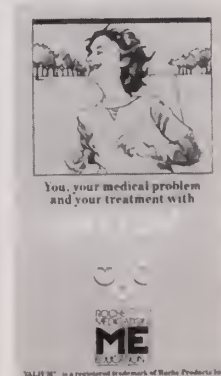
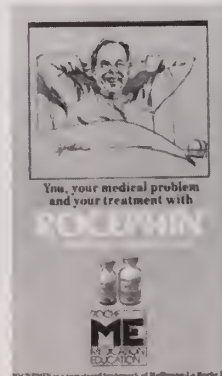
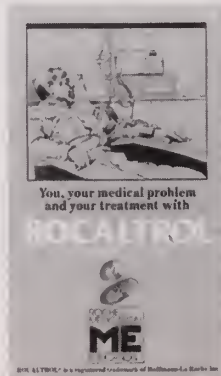
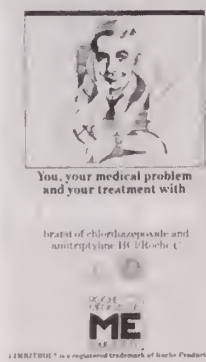
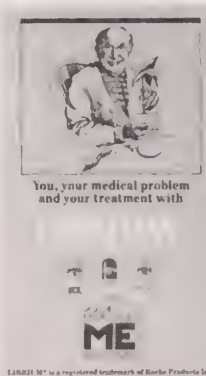


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## A Disparaging Delay

At the pinnacle of the Oklahoma oil boom in the early eighties, a badly needed building project at the Oklahoma Health Sciences Center began. In 1981 the Oklahoma State Legislature appropriated approximately half the cost of a building for the Family Practice Department. The legislature promised to appropriate the remainder of the necessary funds in the next appropriation cycle. However, the Penn Square Bank fiasco supervened and a major down cycle in the oil industry soon developed. Oklahoma state revenues declined sharply, and the second appropriation has not yet been made.

Now, eleven year later, \$3.25 million state dollars lie unused and idle awaiting the necessary matching appropriation required to build the building. For a decade the Family Practice Department has languished in an inadequate jury-rigged lodgment, and the Family Practice educational program has struggled to train physicians in an era of declining recruitment and morale.

Capital state funds have already provided adequate quarters for all of the major departments of the medical center; the Family Practice Department should now be included.

During a decade when the people of Oklahoma appealed for greater availability of primary care physicians, the legislature has not appropriated the additional \$4.2 million that would build the building and increase the numbers of family practitioners. While the health policy makers cry out on the plight of rural Oklahoma, a one-time appropriation of \$4.2 million would eliminate a major deterrent to the education of an increased number of primary care

physicians. For a sum of money that is one-tenth of one percent of the annual state budget, the legislature could give Oklahoma a significantly greater number of the most cost effective physicians now in practice in Oklahoma.

At a time in our national history when all eyes are focused on health care costs, and cost control is everyone's concern, it would be good economics for Oklahoma to increase the numbers of those primary care physicians whose patient evaluation integrates the perspective of all the medical specialties. A trained primary care case management coordinator often saves the patient with complex problems many thousands of dollars of health care costs.

A corps of good family practitioners improves the entire house of medicine. As the sound hull of a good ship lifts everyone aboard up and over the wave, so do good primary care physicians improve the entire medical establishment.

It is time for the Oklahoma Legislature to fulfill an eleven-year-old promise and fund an adequate building for the Family Practice Department. The building site has been dedicated, the architectural plans have been drawn, half the money is in the bank, and the people of Oklahoma wait only on the legislature to do its necessary part.

We physicians should individually remind each of our senators and representatives of the importance of this needed project, and take careful note of what they do.

*Ray V. McIntyre, M.D.*



## Retrospective

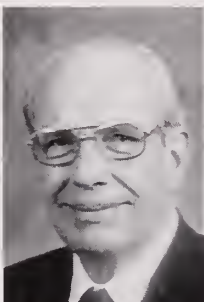
It has been a most interesting and exciting year!

I thought I had a reasonable "feel" for all the activities and functions of OSMA when I started last May, but the number of projects ongoing, the interaction with other organizations, private, governmental, special interest groups, social planners, educators, etc., has been a real eye opener.

All of us in active practice of medicine devote most of our working hours to the daily demands of patients and precious little to the care of our profession—and that is as it should be. If only we could be allowed to do just that and not be forced to spend more and more of our time on paperwork, reports, documentation even of what we "think."

As I have said before: If the OSMA did not exist we would by necessity have to invent it. I doubt many of you can fully appreciate how well this organization operates. Those who serve on one or more councils see parts of it, as do trustees, delegates, and PLICO directors.

The overview one gets as president was a surprise to me, and a pleasant one. Let me assure you that you have a well organized, efficient staff, from Dave Bickham to the newest secretary. I found no weak links, and I think it is important for all of you to know



that. They all give their best — every day, nights, weekends, whatever is needed, and if they ever griped about it I was out of earshot.

Another important point you should know is that all of the doctors I asked to serve in whatever capacity, not a single one declined or asked to be excused—for any reason! My heartfelt thanks to each of you.

From the great pool of talent and knowledge within our membership, others will be asked year after year by succeeding presidents to give of their time and energy, and I know they will be as rewarded as I have been by your response.

My slot as alternate delegate to the AMA will be open when the house meets in May, so you young warriors step forward. I will concentrate my efforts with the Governor's Commission for Health Care over the next few months providing input, as best I can, to formulating a workable plan that will enable now uninsured families access to affordable health care. Maybe it is possible—we must at least study and try—always try.

It has been a fascinating, memorable, and challenging year! I thank you all for allowing me to serve.

A handwritten signature in cursive script, reading "B. J. Seltzer MD".

# Tularemia Pneumonia in Oklahoma, 1982-1987

R. Hal Scofield, MD; Eva J. Lopez, MD; Scott J.N. McNabb, PhD

**Objective:** We assessed the incidence, risk factors, and prognostic implications of tularemia pneumonia in Oklahoma from 1982 through 1987.

**Design:** We retrospectively reviewed all reported case-patients over the six-year period 1982-1987.

**Setting:** Department of Health in Oklahoma, where tularemia is known to be endemic.

**Patients:** Of 128 patients with tularemia who entered the study, 32 had pulmonary involvement.

**Main Results:** Compared to patients without pulmonary involvement, those with tularemia pneumonia were older (52 vs 32,  $p < .0001$ ), less likely to give a history of vector exposure (25% vs 7%,  $p < .05$ ), more likely to present with typhoidal illness (56% vs 15%,  $p < .0001$ ), hospitalized longer (11.6 vs 4.7 days,  $p < .001$ ), more likely to have a positive culture (9 vs 7,  $p < .01$ ), and more likely to die (4 vs 1,  $p < .01$ ).

**Conclusions:** Patients with tularemia pneumonia often present without historical or physical examination findings that suggest the diagnosis; thus, tularemia pneumonia often cannot be distinguished from other cases of community-acquired pneumonia. Therefore, especially in areas where the disease is endemic, tularemia must be considered in patients with pneumonia.

In 1911, McCoy and Chapin isolated an organism causing a "plague-like" illness of ground rodents in Tulare County, California.<sup>1,2</sup> Subsequently, Francis elucidated the diverse clinical picture and the epidemiology of the disease now known as tularemia.<sup>3,4</sup>

Since Francis's landmark study of 800 patients in 1928,<sup>4</sup> the incidence rate of reported tularemia peaked in 1939 with 20 per million and has markedly decreased to a rate of less than one per million in 1989.<sup>5</sup> However, despite the decline in reported cases, tularemia continues to be an important zoonotic disease seen sporadically and in epidemics throughout the United States.<sup>6,7</sup> Furthermore, tularemia is most likely significantly underreported and underdiagnosed, but perhaps often treated empirically by the widespread use of broad-spectrum antibiotics in the patient with a febrile illness of uncertain etiology.<sup>8</sup> In addition, the disease is endemic to a number of states, including Oklahoma.<sup>9,10</sup> Of 142 cases of tularemia reported to the Centers for Disease Control (CDC) in 1989, 10 (7%) were from Oklahoma.<sup>11</sup> The average number of reported cases from Oklahoma from 1980 through 1989 was 25.<sup>11</sup> So, this disease continues to be important in those areas where it is endemic and also in other regions of the country where it is less frequently encountered, but sometimes seen in outbreak settings.

Tularemia is, according to its presentation, often classified as ulceroglandular, glandular, oculoglandular, or typhoidal.<sup>12</sup> More recently, division into only ulceroglandular or typhoidal has been suggested as being more representative of the pathophysiology of the disease.<sup>8</sup> Pulmonary involvement can complicate any form of this disease and was first noted by Verbrycke in 1924.<sup>13</sup> He reported pulmonary nodules and pleural effusion at the autopsy of a patient who died of tularemia.

While a number of studies have described the

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roentgenographic characteristics of pulmonary tularemia,<sup>14-16</sup> fewer have described the clinical features,<sup>8</sup> and no study has directly compared those tularemia patients with and without pneumonic involvement. We undertook the present investigation in order to determine the incidence, clinical and epidemiologic features, and prognosis of the disease, and to see if patients with tularemia pneumonia present differently than do those tularemia patients without pneumonia.

## Methods

We retrospectively reviewed all cases of tularemia reported to the Oklahoma State Department of Health (OSDH) from January 1982 through December 1987 (6 calendar years) to determine the incidence, risk factors, and prognostic implications of tularemia pneumonia. A detailed questionnaire was mailed to the attending physician of each case-patient reported to the OSDH during this period of time. The questionnaire elicited demographic, clinical, diagnostic, transmission, treatment, and outcome data. The case definition of tularemia included persons with a compatible clinical illness and one of the following serologic markers: a fourfold or greater rise between acute and convalescent IgG titers, or a single immunofluorescent IgG antibody titer of greater than 1:160. A case was also defined as a person with a compatible clinical illness and a positive culture. For patients with apparent pneumonic involvement (defined as an acute alveolar infiltrate or pleural effusion on chest radiography), we reviewed all available medical records. The confidentiality of each individual case-patient was assured throughout the entire review process, and we obtained releases of medical information.

We performed statistical comparisons of patient groups using the Fisher's exact test, Chi-square analysis, or the Student's test, as appropriate.

## Results

A total of 155 cases of tularemia were reported to the OSDH during the six-year period surveyed. The greatest number of cases (36) occurred in 1982, while 1986 had the fewest number cases (15). Of the 155 cases, 128 had detailed questionnaires completed and returned to the OSDH for analyses. These 128 cases form the basis of this study.

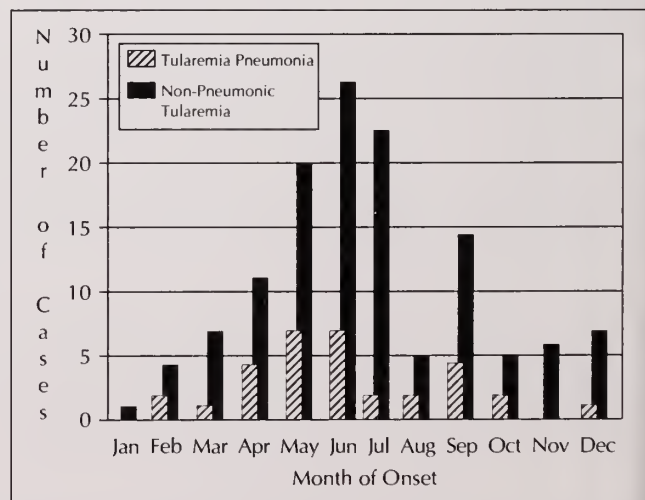
The descriptive epidemiology of the case-patients was noteworthy. Thirty-two of the 128 cases (25%) had pneumonic involvement, defined as the presence of an acute alveolar infiltrate or pleural effusion on

chest radiograph. The majority of pneumonic tularemia (75%) and non-pneumonic tularemia (76%) occurred in males. The mean age for all tularemia case-patients was 37, with a range of 13 months to 86 years. Patients with pneumonic involvement tended to be older (52 vs 32 years,  $p < .0001$ ). In fact, 90% of tularemia pneumonia case-patients were  $\geq 30$  years old.

The total number of tularemia case-patients by month of onset of illness is shown in Figure 1. The greatest number of case-patients had onset in the month of June, followed by May and July. This epidemic curve shows a summer seasonal pattern of disease onset.

As has been previously observed,<sup>9</sup> tularemia is found primarily in the central and eastern portion of Oklahoma. The six-year mean incidence rate of tularemia by county is shown in Figure 2. The mean state incidence rate during the six-year period under investigation was 0.65/100,000/yr. The mean incidence rate for tularemia pneumonia by county is shown in Figure 3. The overall state rate for tularemia pneumonia was 0.16/100,000/yr. Sequoyah county, in far eastern Oklahoma, had the highest rate of tularemia pneumonia of 2.3/100,000/year.

Rabbits are often implicated in the transmission of tularemia;<sup>12</sup> however, several other animals, including muskrats, tomcats, and beaver can transmit tularemia to humans.<sup>6,8,19-22</sup> In addition, tick exposure is a risk factor in acquiring the disease,<sup>8,12</sup> especially in Oklahoma.<sup>9</sup> Of the 128 cases, 113 (88%) gave a definite animal or vector exposure history. We observed the lack of vector exposure to be significantly different between pneumonia and non-pneumonia case-patients. Eight of 32 (25%) pneumonia case-patients



**Figure 1.** Number of Tularemia Pneumonia and Non-Pneumonic Tularemia Case-Patients by Months of Onset, Oklahoma, 1982-1987.



recalled no exposure to ticks or rabbits, whereas only 7 of 96 (7%) case-patients without pneumonia recalled no exposure ( $p < .05$ ).

We also observed a significant difference in the clinical form of tularemia between those with pneumonic involvement and those without. Pneumonia can complicate any form of tularemia and is often a result of hematogenous spread.<sup>8,12</sup> However, tularemia pneumonia also can be directly acquired via inhalation.<sup>7,17,18</sup> Among all 128 cases, 32 (25%) had typhoidal and 96 (75%) had ulceroglandular disease. Among pneumonic cases however, 18/32 (56%) had typhoidal tularemia, whereas only 14/96 (15%) of non-pneumonic cases had typhoidal illness ( $p < .0001$ ).

We also examined the clinical features of the 32 tularemia pneumonia case-patients. These data are presented in Figure 4. All 32 tularemia pneumonia case-patients had a fever upon presentation. The average highest temperature recorded was 103.5°F, with a range of 101.5° to 107°F. Twenty-three (72%) gave a history of cough, usually nonproductive, but only ten (31%) had pleuritic chest pain. Four of the 32 had respiratory failure that required mechanical ventilation. Two others were without respiratory symptoms. Chest radiographs revealed a lobar infiltrate in 19 (60%) of the case-patients, while 11 (34%) had multi-lobar infiltrates. One patient had only an effusion, but seven others had an effusion associated with an infiltrate. Thus 8/32 (25%) patients with pneumonic involvement had a pleural effusion. Review of available medical records revealed 7 case-patients with tularemia pneumonia had hyponatremia. Also, an elevated CPK was found in 9 patients.

The duration of symptoms prior to seeking medical care (5.6 vs 4.8 days) and delay until diagnosis (11 vs 9.4 days) did not vary with the presence or absence of pneumonia. However, the period of hospitalization (11.6 vs 4.7 days,  $p < .001$ ), number with positive cultures (9 vs 7,  $p < .01$ ), and number of deaths (4 vs 1,  $p < .01$ ) were significantly different. Diagnoses in 23/32 (72%) pneumonic cases were made by serology alone, compared with 94/96 (98%) non-pneumonic cases. Contrary to previous reports,<sup>7,12,22,23</sup> of all 128 tularemia cases, cultures of blood (4), wounds (7), pleural fluids (3), and lymph nodes (2) were frequently positive (Table 1).

A review of the outcome of the 128 patients with tularemia in Oklahoma during this time period (1982 through 1987) revealed 5 (4%) died. Of these, one had non-pneumonic tularemia and four had pneumonic tularemia ( $p < .01$ ). The average age of those who died was 75 years. The average age of the survivors was 37

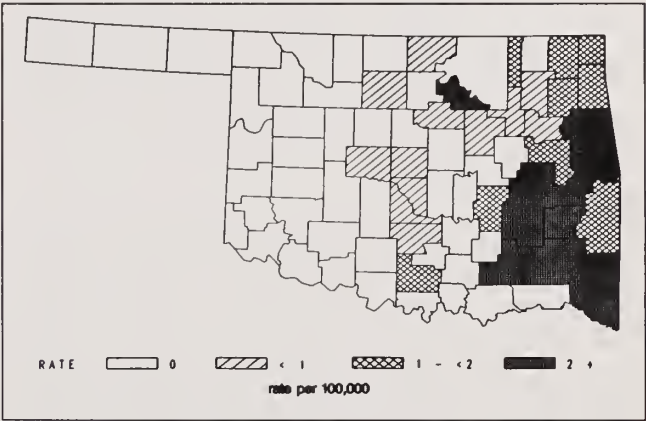


Figure 2. Mean Rate of Tularemia in Oklahoma, 1982-1987.

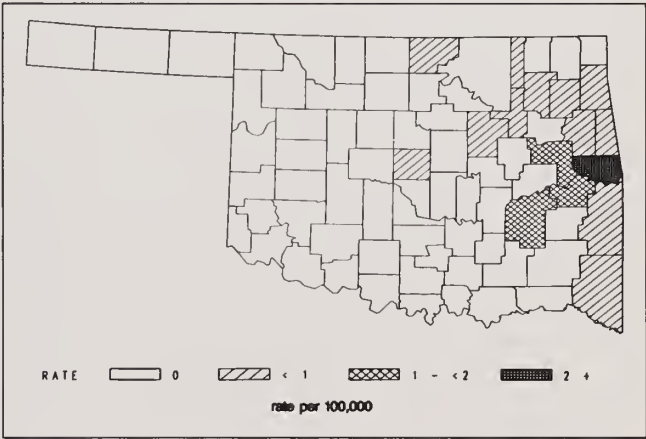


Figure 3. Mean Incidence of Rate of Tularemia Pneumonia in Oklahoma, 1982-1987.

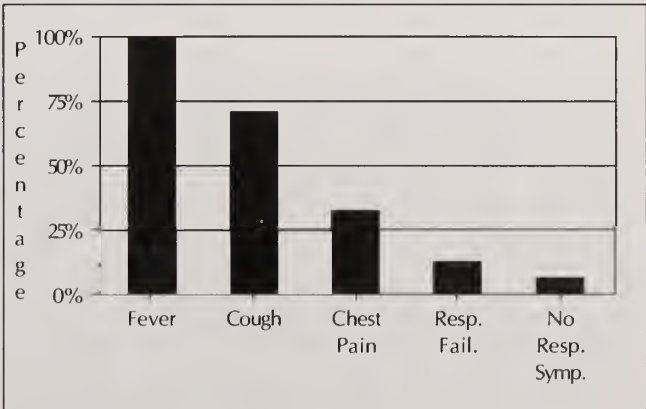


Figure 4. Critical Features of 32 Tularemia Pneumonia Case-Patients by Symptom.

years. Of the four patients with tularemia pneumonia who died, two had typhoidal and two had ulceroglandular disease. The significantly different observations between tularemia with and without pneumonia are presented in Table 2.

## Discussion

We retrospectively evaluated cases of tularemia pneumonia over a six-year period (1982 through 1987) in Oklahoma. Our purposes were to determine the incidence, clinical and epidemiologic features, and prognosis of the disease, and to determine if patients with tularemia pneumonia presented differently than tularemia patients without pneumonia. There were few comparisons of tularemia patients with and without pneumonia found in the literature. Our study directly compared tularemia case-patients with and without pneumonia, and we found a number of differences in the epidemiology, presentation, diagnosis, and outcome. First, those with respiratory involvement were older. Before age 35, few had pneumonia; however, after 35 years of age almost half of those with tularemia had pneumonia. We also found a difference in vector exposure between the two groups. Those with respiratory illness were statistically less likely to give a history of exposure to a tick or animal vector. There appeared to be no artifactual reason that an exposure history could not be obtained from those with no exposure, such as extreme age or severity of illness. A difference in exposure to potential vectors between pneumonic and non-pneumonic tularemia has not been previously reported.

Considering the descriptive epidemiology of tularemia (ie, person, time, and place events) during this study period, one aspect is unlike that of previous studies of tularemia in Oklahoma and elsewhere. In previous studies, two seasonal peaks were observed in the epidemic curve. The summer peak (April through

September) of disease previously observed was thought to be associated with tick exposure, while the winter peak (November and December) presumably represented exposure to rabbits. We did not observe this bimodal distribution of cases as noted in previous studies. We did not observe a significant winter peak. Evans et al<sup>8</sup> also noted the progressive decline in the proportion of winter month cases over several decades. Our study spans 6 years, so we cannot make conclusions about long-term trends.

The decline in winter disease could be explained by fewer exposures to rabbits as a result of a more urban population. However, in eastern Oklahoma this would appear not to be the case, as the population has remained steady and largely rural. In addition, case exposure to rabbits in 1960 was reported the same as in our study.<sup>9</sup> Since exposure to rabbits remains unchanged, levels of disease in the rabbit population may have declined. This seems a probable explanation, since data comparing the prevalence of rabbit infection in the 1920s<sup>26</sup> to that of the 1950s and early 1960s<sup>27</sup> show a significant decrease in rabbit infection rates. Also, public health education campaigns designed to teach hunters specific tularemia preventive measures may have had a positive impact on disease reduction.

Pneumonia complicated 32/128 (25%) of the cases of tularemia in our review. In a series of 88 patients spanning 30 years, Evans et al<sup>8</sup> found 37 of 88 (47%) with pneumonic involvement. Thus, we found a lower percent with pneumonic involvement (25% vs 47%). The difference between these series may be in large part due to a difference in the numbers of chest

Table 1. Summary of Reported Cultures of *F tularensis* in Naturally Acquired Infection

Ref.	Blood	Pleural Fluid	Ulcer	Other
12	2		2	1 (eye)
23		1		
24	4			
31	3			1 (lung bx)
32	2			1 (lph nd)
Scofield, et al	4	3	7	2 (lph nd)

lph nd = lymph node

Table 2. The Significantly Different Observations between Tularemia Pneumonia and Non-Pneumonic Tularemia Cases, Oklahoma, 1982-1987.  
(Total number of tularemia cases, 128)

Observation	Tularemia Pneumonia	Non-Pneumonic Tularemia	p Value
Age	Mean = 52	Mean = 32	<.0001
No vector exposure (%)	8/32 (25)	7/96 (7)	<.05
Days of hospitalization	Mean = 11.6	Mean = 4.7	<.001
Typhoidal illness (%)	18/32 (56)	14/96 (15)	<.0001
Positive cultures	9	7	<.01
Deaths	4	1	<.01
Total	32	96	



radiographs taken. Only 10/88 (11%) case-patients reported by Evans et al<sup>8</sup> did not have a chest radiograph, while in our cohort, 64/128 (50%) did not have a chest radiograph. Furthermore, we observed only two patients with no pulmonary symptoms and pneumonia on radiography, but of the 37 tularemia pneumonia patients cited by Evans et al<sup>8</sup> 11 had no pulmonary symptoms. We think that the apparent difference in pneumonic involvement noted is most likely due to the difference in the frequency of chest

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***In order to accomplish the diagnosis of tularemia pneumonia and initiate proper therapy, the physician must maintain a high index of suspicion.***

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radiographs obtained in patients without clinical suspicion of respiratory disease.

Pneumonia is known to accompany all forms of tularemia, and this was true among our case-patients. We observed typhoidal illness in 18/32 (56%) patients with pneumonia, but only in 14/96 (15%) of those without pneumonia ( $p < .0001$ ). While it has been noted in previous reports that typhoidal disease was commonly associated with pneumonia,<sup>27</sup> only one previous report presented a direct comparison between the rate of typhoidal illness in pneumonic and non-pneumonic tularemia.<sup>8</sup> In this group, 31% with ulceroglandular and 83% with typhoidal disease had pneumonia.

Physicians usually diagnose tularemia by clinical evidence and serologic conversion.<sup>12</sup> Considering several previous laboratory accidents,<sup>28,29</sup> many consider *Francisella tularensis* an important laboratory-acquired pathogen and avoid its culture. We found few reports of *F tularensis* culture used in the diagnosis of tularemia (Table 1). However, cultures were often positive in our study. Nine of 32 tularemia pneumonia case-patients had positive cultures, but only 7/96 non-pneumonic case-patients had positive culture ( $p < .01$ ).

In particular, pneumonia case-patients were more likely to have positive blood cultures (3 vs 1,  $p < 0.01$ ). Of course, this in itself does not mean that pneumonia case-patients were more likely to be bacteremic. Be-

cause these patients were generally sicker and the diagnosis less obvious, blood cultures may have been obtained more frequently. Therefore, the greater rate of culture positivity among tularemia pneumonia case-patients could be the result of more intensive investigation or the result of more frequent and possibly longer lived bacteremia. Also, the use of radio-metric centrifugation isolation techniques may enhance the recovery of *F tularensis* from blood.<sup>24</sup> It is not clear if this technology was used during our study. A positive blood culture was a strong predictor of death, however, as all three tularemia pneumonia case-patients with a positive blood culture died. Several cultures of pleural fluid also grew *F tularensis*. Positive pleural fluid cultures have been reported only once before.<sup>23</sup> The organism is fastidious, and requires a medium rich in sulfhydryl compounds such as cysteine for growth. Attempts to culture *Legionella* on media such as charcoal yeast extract agar may yield *F tularensis* instead.

Since inhalation of as few as 10 to 50 organisms can produce disease,<sup>30</sup> handling of this organism is a potential health risk to laboratory workers.<sup>28,29</sup> However, we observed no laboratory-acquired cases of tularemia during the period of this study. We conclude that in a present-day clinical laboratory with use of a biological hood, isolation of *F tularensis* can be performed safely.

Perhaps there are a few previous comparisons between pneumonic and non-pneumonic tularemia because pneumonia is considered a complication of, not a primary form of tularemia. However, animal experimentation<sup>30</sup> and several laboratory accidents<sup>28,29</sup> strongly suggest that tularemia can be acquired by inhalation of an aerosolized droplet nuclei. The clinical relevance of this mechanism in naturally occurring disease has not been established. Pneumonia is generally considered to arise by hematogenous spread in naturally acquired disease, although a number of previous workers have proposed that typhoidal disease with pneumonia may be acquired via inhalation.<sup>7,17,18</sup> Others have proposed that pneumonia should be considered a primary form of the disease.<sup>18</sup> Clearly, a patient with a known tick bite and ulceroglandular disease develops pneumonia hematogenously. In our review, this type of patient was likely to have multilobar involvement suggesting hematogenous spread. However, 12/32 (38%) tularemia pneumonia patients presented with no tick exposure and concomitant typhoidal illness. These patients were more likely to have a single lobe pneumonia. We hypothesize that these patients acquired tularemia via inhalation



and that, in fact, the lung may have been the primary site of infection.

Another significant difference between these two groups was outcome. Both pneumonia and typhoidal illness have long been considered predictors of poor outcome, but these factors have not been clearly separated. In our study, pneumonia alone was clearly a risk factor for death. Of the five deaths, four had pneumonia; of these four, two each had typhoidal and ulceroglandular forms. So, of the variables mentioned, the risk of death was independent of the clinical classification to tularemia, but instead, dependent on the presence of pneumonia. In general, patients with tularemia pneumonia were sicker as evidenced by the length of hospitalization (11.6 vs 4.7 days).

## Conclusion

Whatever the route of infection, the patient who presents with typhoidal illness and lack of history of animal or arthropod exposure is a diagnostic problem. No specific laboratory test identifies infection, except serology or culture. Serological studies are not generally of value in the acutely ill, febrile patient, especially since antibody response is most often negative early in the course of illness.<sup>12</sup> Furthermore, culture is difficult and slow. So, tularemia should be diagnosed and treated on the basis of the history and physical examination; however, this will be of little value in the patient with pneumonia, typhoidal illness, and no exposure history, such as many tularemia pneumonia case-patients in our review from Oklahoma. Nonetheless, in order to accomplish the diagnosis of tularemia pneumonia and initiate proper therapy, the clinician must maintain a high index of suspicion, especially in a patient whose pneumonia fails to respond to more routine antibiotics. In summary, tularemia must be considered in the differential diagnoses of patients who present with community-acquired pneumonia, especially in an endemic area such as Oklahoma. J

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# Physician Census and Geographic Distribution in Oklahoma From 1984 To 1990

F. Daniel Duffy, MD; C.S. Lewis, Jr., MD; Michael Lapolla, MHA

The authors provide an update on physician manpower trends on Oklahoma.

Attracting physicians to practice in small rural communities has dominated Oklahoma's public policy on physician manpower and education for the past twenty years. These policies are currently under review; therefore, an analysis of Oklahoma physician manpower trends is timely. The public policies, which finance physician manpower over the next years, must be carefully crafted to avoid undermining the gains made so far.

This paper provides the data and analysis upon which wise policy for physician education might be crafted. It attempts to answer the following questions: What is the number of physicians practicing in each specialty in each community, county, and region of the state? How effective are the Oklahoma graduate medicine education programs in providing needed physicians?

## Methods

**Physician Manpower Model.** A modification of the table used by Duffy, Lewis, and Miller in 1984<sup>1</sup> was used in this study. It is displayed in Table 1.

**Physician Specialty Classification.** Column 1 lists the name of the specialty. Each physician was assigned to one of the AMA's 85 specialty classes. The classes were re-grouped according to the pattern used by Duffy, Lewis, and Miller.<sup>1</sup> We then placed each of these 41 specialties into one of eight practice/training

groups. The specialties within a group overlap in the type of medical services provided and in the nature of their training and serve as a convenient means of analysis.

Family practice (FP) is defined as those MD or DO physicians completing three years of graduate medical education (GME). General practice (GP) is defined as those MD GP and DO GP physicians who enter practice after one year of internship.

**1984 Physician Census.** The data base published by Duffy, Lewis, and Miller<sup>1</sup> in 1984 was used as the base year's data for this study. The number of physicians in practice in each specialty in 1984 is displayed in Column 2 of Table 1.

**1990 Physician Census.** The number of physicians in practice in Oklahoma in 1990 is displayed in Column 3 of Table 1. The numbers were furnished by customized printouts from the Board of Medical Licensure and Supervision for MDs and from the Oklahoma Osteopathic Association for DOs. The count was conducted in February 1990.

Included are physicians, semiretired physicians, physicians in federal service, faculty/research physicians, and physicians in administrative positions. Excluded are licensed physicians in GME programs, retired physicians, physicians with Oklahoma licenses who are practicing out-of-state, physicians with suspended licenses, SMD physicians (MD interns), and unlicensed PGY-I DO physicians.

**Actual 1984-90 Gain or Loss of Physicians.** Column 4 is the difference between the number of physicians in practice in 1990 (Column 3) and those in practice in 1984 (Column 2).

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Table 1. Oklahoma Physician Manpower Supply Model

1	2	3	4	5	6	7	8
Specialty Group	1984 Physician Census	1990 Physician Census	Actual 1984-1990 Gain/Loss	OK Grads 1984-1990 in OK Practice	Physicians Replaced by Okla GME Grads	Physicians New to OK Not OK GME Grads	Physicians Lost to Okla Practice
<b>I. FP/GP Group</b>							
Family practice	541	624	83	115	32		
MD general practice	252	195	-57		0		-57
DO general practice	501	442	-59	102	102		-59
Preventive medicine	54	55	1	0	0	1	
Group Total	1,348	1,316	-32	217	134	1	-116
<b>II. Obstetrics &amp; Gynecology</b>	257	273	16	28	12	0	0
<b>III. Medicine Specialty Group</b>							
Gen. internal medicine	487	507	20	103	83		
Allergy	23	17	-6	0	0		-6
Cardiology	59	115	56	11	0	45	
Dermatology	49	51	2	5	3		
Endocrinology	16	14	-2	9	9		-2
Gastroenterology	46	56	10	18	8		
Hematology/oncology	36	47	11	20	9		
Infectious disease	9	8	-1	11	11		-1
Nephrology	17	19	2	5	3		
Neurology	43	55	12	13	1		
Pulmonary	28	36	8	13	5		
Rheumatology	21	24	3	7	4		
Group Total	834	949	115	215	136	45	-9
<b>IV. Pediatric Specialty Group</b>							
General pediatrics	264	268	4	53	49		
Neonatology	12	15	3	4	1		
Pediatric subspecialties	16	10	-6	2	2		-6
Group Total	292	293	1	59	52	0	-6
<b>V. Hospital-Based Group</b>							
Anesthesiology	177	206	29	37	8		
Emergency medicine	142	164	22	16	0	6	
Pathology	112	125	13	9	0	4	
Radiology	215	233	18	29	11		
Nuclear medicine	4	7	3	1	0	2	
Rehabilitation medicine	2	14	5	0	0	5	
Group Total	659	749	90	92	19	17	0
<b>VI. Surgical Specialty Group</b>							
General surgery	286	273	-13	31	31		-13
Neurosurgery	34	38	4	5	1		
Ophthalmology	132	139	7	8	1		
Orthopedic surgery	153	169	16	10	0	6	
Otolaryngology	61	76	15	6	0	9	
Plastic surgery	30	31	1	2	1		
Thoracic surgery	35	21	-14	0	0		-14
Urology	85	96	13	10	0	3	
Group Total	814	843	29	72	34	18	-27
<b>VII. Psychiatric Group</b>							
Child psychiatry	10	17	7	10	3		
Psychiatry	197	208	11	24	13		
Group Total	207	225	18	34	16	0	0
<b>VIII. Other Physician Group</b>	39	76	37	23	0	14	0
Total Physicians	4,450	4,724	274	740	403	95	-158



**cians.** Column 4 is the difference between the number of physicians in practice in 1990 (Column 3) and those in practice in 1984 (Column 2).

**Oklahoma GME Graduates from 1984-1990 in Practice in Oklahoma in 1990.** Column 5 displays the number of Oklahoma GME graduates who entered practice in the state between July 1984 and July 1989. Since most physicians enter practice after completing GME training in July, the difference between the number in July 1989 and the physician count in February 1990 was considered negligible.

The number of GME graduates was counted from reports provided by the University of Oklahoma College of Medicine Oklahoma City and Tulsa, the OSU College of Osteopathic Medicine and Surgery, and the DO hospitals providing GME programs. Graduates were counted at the completion of all residency and fellowship training.<sup>2</sup> Physicians who performed preliminary training in Oklahoma, but completed training elsewhere and returned for practice, were not counted as GME graduates but were counted among the new physicians entering practice.

**Replacement of Physicians by Oklahoma GME Graduates.** Column 6 is the number of Oklahoma GME graduates who replaced physicians leaving practice in the respective specialty. In some specialties the total number of graduates were used to replace physicians leaving practice. In other specialties a portion of the graduates replaced physicians, and the remainder occupied positions new to the state.

**Physicians New to Oklahoma Who Are Not GME Graduates.** Column 7 is a calculation of the minimum number of physicians who were recruited

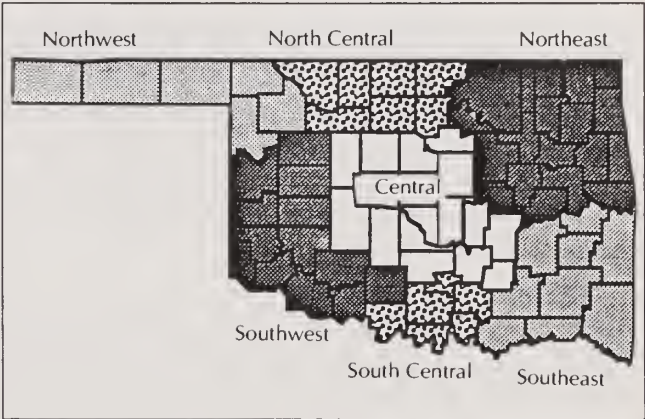


Figure 1. Geographic Analysis Regions

into practice in the state from practice or GME programs elsewhere.

**Physicians Not Replaced.** Column 8 is the number of physicians lost between 1984 and 1990 in the specialty who were not replaced by either Oklahoma GME graduates or recruited physicians into that specialty.

**Geographic Distribution of Physicians by Specialty.** We defined seven geographic regions of commercially interrelated counties. These regions are described in greater detail in another report.<sup>3</sup> The seven regions are diagrammed in Figure 1 and their demographic characteristics are displayed in Table 2.

Using the data base from 1984 and 1990, we counted the physicians in each specialty in each community, county, and region. We compared the

Table 2. Demographics of Oklahoma Health Service Regions						
Region	(Counties)	1990 Okla. Population	1990 Phys.	Pop./ Square Mile	Phys./ 100K Pop.	1984-90 Change in Physicians
Central	(17)	1,250,480	2,177	92	174	190
Northeast	(20)	1,118,824	1,762	75	157	81
South Central	(6)	90,989	86	26	95	-21
Southwest	(13)	288,131	290	25	101	17
North Central	(7)	145,099	202	21	139	4
Southeast	(8)	198,783	151	21	76	-7
Northwest	(6)	53,279	56	6	105	10
Oklahoma	(77)	3,145,585	4,724	46	150	274

Population from 1990 US Census Bureau  
1990 Physician census excludes physicians in GME training

number of physicians in urban and rural counties, and in incorporated community groups arranged by size.

To determine the change in population of each county, we used the 1984 estimates of Oklahoma population<sup>4</sup> and the 1990 US Census Bureau data.<sup>5</sup> Physician-to-population ratios for 1990 were calculated for each geographic area.

## Results

**Number of Physicians in Practice in Oklahoma in 1990.** As shown in Table 1, there were 4,724 physicians practicing in Oklahoma in February 1990. That is an increase of 274 from the 4,450 in 1984. However, 740 new physicians from Oklahoma GME programs entered practice in Oklahoma, replacing 403 physicians who left practice.

All the gain was in the 275 MD physicians. There was one less DO (697) in 1990 than in 1986 (698). Over the same time, Oklahoma trained and retained 102 new DO GPs and an undetermined number of DO specialists.

**Changes in Number of Physicians by Specialty from 1984 and 1990.** As shown in Column 4 of Table 1, seven of the eight specialty groups increased. The family/general practice (FP/GP) group decreased. Oklahoma trained and retained 115 FP physicians who replaced 89 physicians (32 FP and 57 MD GP). Likewise, Oklahoma trained and retained 102 DO GPs, which was insufficient to replace the 161 DO GPs who left practice. At the end of the study period there were 83 more FPs, 57 fewer MD GPs, and 59 fewer DO GPs. Adding these changes with one more preventive medicine specialist produced a net loss of 32 physicians in the FP/GP group.

The medicine specialties group experienced the greatest gain — 115 physicians. The hospital-based specialties group grew by 90, the surgical specialties group by 29, the psychiatry group by 18, the obstetrics and gynecology by 16, and the "other" group by 37. The pediatric specialties group held nearly constant, with a gain of one physician.

Considering that internal medicine, pediatrics, and obstetrics and gynecology also provide primary care, the increase in 4 general pediatricians, 20 internists, and 16 OB-GYN specialists completely offsets the loss of 32 GP/FP physicians, giving a net increase of 8 primary care physicians.

The specialty fields experiencing the largest net gains were family practice (83), cardiology (56), "other" (37), anesthesiology (29), emergency medicine (22), general internal medicine (20), radiology (18), ortho-

pedic surgery (16), otorhinolaryngology (15), pathology (13), and urology (13).

The specialty fields experiencing the largest net reductions were DO general practice (-59), MD general practice (-57), thoracic surgery (-14), general surgery (-13), pediatric subspecialties (-6), and allergy (-6).

**Geographic Variations of Physicians and Specialty.** Table 2 shows the 1990 population, physician census, population density, physician/100,000 population ratio, and the change in number of physicians from 1984 to 1990 for each of the seven geographic regions of Oklahoma. Three patterns emerge. The first pattern is comprised of the regions containing Oklahoma's urban centers, the Central (Oklahoma City) and the Northeast (Tulsa) regions. The population density is greatest with 92 and 75 persons per square mile respectively. Likewise, the physician-to-population ratio is greatest, being 174 and 157 respectively. Both regions experienced a modest increase in the number of physicians, 190 (8%) and 81 (4%) respectively. During this time, the Health Sciences Center in Oklahoma City experienced substantial growth in academic and research physicians.

The second, a mid-sized pattern, is made up of four regions: South Central (Ardmore), Southwest (Lawton), North Central (Enid), and Southeast (McAlester). The population density ranges from 21 to 26 persons per square mile and the physician-to-100,000-population ratios are 76 to 139. It was these regions which experienced the greatest variation in physician manpower changes. The South Central region experienced a loss of 21 (-19%), the Southwest a gain of 17 (5%), the North Central a gain of 4 (2%), and the Southeast a loss of 7 (-4%).

The third pattern is the unique Northwest region. It has the smallest population; lowest population density, with 6 persons per square mile; and a mid-range physician-to-100,000-population ratio of 105. This region experienced the greatest percent increase (15%), gaining 10 new physicians.

Exploring the geographic distribution of specialties, Table 3 displays the changes for each of the seven regions. Only the Central region gained FP/GPs, with an increase of 20. All others lost. Offsetting these losses, all but the Southwest (Lawton) region gained physicians from the medicine specialties group. The four mid-sized regions lost pediatric specialists while both the urban regions and the unique Northwest gained them. All regions gained hospital specialties. Six of the seven regions gained psychiatry specialists.



Table 3. 1986-1991 Change in Physician Specialties in Oklahoma Regions

Region	Population Change	MD	DO	FGP	MED	PED	HOS	SUR	PSY	OB	Oth	Tot	Phy/ Pop
Central	-27,920	179	11	20	61	3	40	15	9	12	30	190	174
Northeast	-30,376	86	-8	-13	41	3	28	13	2	4	3	81	157
N. Central	-21,601	-7	-12	-18	3	-2	2	-2	1	-5	0	-21	139
Northwest	-12,321	8	-4	-8	3	2	2	1	2	2	0	4	105
Southwest	-45,469	9	8	-5	-2	-2	13	-2	7	2	6	17	101
S. Central	- 8,111	-3	-4	-7	3	-1	2	-1	0	-1	-2	-7	95
Southeast	- 6,517	3	7	-1	6	-2	3	5	-3	2	0	10	76
Oklahoma	-152,315	275	-2	-32	115	1	90	29	18	16	37	274	150

Like pediatrics, the urban regions and the unique Northwest gained surgery specialties while three of the four mid-sized regions lost surgeons.

Tables 4 through 6 display the changes in MD and DO physicians and their specialties for each county in each of the three groups of regions. Most of the Oklahoma counties lost population as measured in the census when compared to the estimates of 1984. Considering that the "oil bust" occurred during this time, the loss of Oklahoma population seems real. There seemed to be no pattern to the loss of population and the loss or gain of physicians except that counties which gained population also gained physicians.

MD and DO physicians were lost from both the North Central and South Central regions. DOs were lost in four regions. The number of DOs increased in the Central (Oklahoma City) region, the Southwest (Lawton) region and the Southeast (McAlester) region.

The number of medical specialists increased in 27 counties, decreased in 6, and was unchanged in 44. FP/GP increased in 26, decreased in 40, and was unchanged in 11. As for hospital specialties, 25 gained, 12 lost, and 40 remained unchanged. Surgery gained in 21 counties, lost in 18, and remained unchanged in 38.

Of the 472 communities under 2,500 persons, 86 have a physician practicing in that community. Every community greater than 15,000 has at least one physician. Of the communities between 2,500 and 15,000, only Heavener (population 2,601) is a rural community without a physician. All other communities between 2,500 and 15,000, without a physician, are incorporated communities located within a large urban center, for example Nichols Hills in Oklahoma City.

MD and DO physicians practice in every size community. Compared with MDs, a larger percent-

age of the total DO census practices in smaller rather than larger communities. However, the data shows that in communities of under 2,500 there were 97 MDs and 71 DOs, and in communities between 2,500 and 7,500 there were 237 MDs and 125 DOs. In communities between 7,500 and 15,000 there were 254 MDs and 73 DOs.<sup>9</sup>

## Discussion

**Increase in Physicians for Oklahoma from 1984 to 1990.** The census of Oklahoma physicians increased by 1% during the six years when the US physician supply increased 3.2%.<sup>6</sup> The physician-to-population ratio (including residents counted as .35 FTE physician) increased 6% from 141 in 1984 to 156 in 1990. This is less than the 167 physicians/100,000 population predicted by Duffy, Lewis, and Miller in 1984.<sup>1</sup> The physicians/100,000 population would have been even lower had the population grown as predicted.

The net increase or decrease of physicians tells only a part of the manpower picture. Three other factors are important: the replacement of attrition, the change in specialty mix, and the geographic distribution of physician specialties.

**Replacement of Attrition.** A problem with this analysis is that retiring physicians were not specifically identified but were estimated as the difference between the net change of physicians and the number of Oklahoma GME graduates entering practice. The result provides a gross underestimation of the actual attrition rate. Furthermore, it fails to identify those new physicians who moved to Oklahoma to enter practice after completing GME programs elsewhere.

A more accurate estimate of 833 physicians probably left practice during the study years. That estimate is derived by using an attrition rate of 2.9% per year. The rate is taken from a Center for Health



Policy Research analysis of Oklahoma physicians by specialty in 1986.<sup>8</sup> Face validity for the rate was obtained by confirming the rate of lapsing licenses with estimates provided by the clerks at the respective state boards.<sup>9</sup>

**Oklahoma GME Physician Supply.** Since Oklahoma gained 274 physicians and lost an estimated 833 physicians, 1,107 new physicians entered practice from 1984 to 1990. We counted 740 graduates of

Oklahoma GME programs who entered practice. Therefore, 67% of the new doctors were Oklahoma GME graduates. From another perspective, the Oklahoma GME graduates provided 89% of the replacements for retiring physicians.

The Oklahoma residency programs provided most of the new primary care physicians. The 115 FP physicians, the 103 internists, the 53 pediatricians, and the 28 OB-GYN physicians replaced the attrition

**Table 4. 1984-1990 Change in Physician Specialties in Urban Regions**

(1984 estimate of population and 1990 US Census Data)

Region	Population Change	MD	DO	FGP	MED	PED	HOS	SUR	PSY	OB	Oth	Tot	Phy/Pop
<b>Central</b>													
Blaine	-3,430	-1	3	2	1	0	0	-1	0	0	0	2	87
Caddo	-5,150	1	0	0	0	0	0	0	1	0	0	1	44
Canadian	7,509	12	-4	4	3	1	-1	1	1	-1	0	8	51
Cleveland	21,653	1	1	-1	5	-1	-3	5	-1	-6	4	2	98
Coal	-120	2	2	3	0	0	0	0	0	1	0	4	104
Garvin	-4,095	-1	-2	-4	1	1	0	0	0	0	-1	-3	79
Grady	-3,453	-2	0	-1	0	0	1	-3	0	1	0	-2	103
Hughes	-1,977	-3	0	-2	0	0	0	-1	0	0	0	-3	69
Kingfisher	-3,188	-1	-3	-4	0	0	0	0	0	0	0	-4	53
Lincoln	16	4	-2	1	0	0	1	0	0	0	0	2	41
Logan	-989	1	-2	0	0	1	-1	-2	0	1	0	-1	41
McClain	-705	1	-1	-1	0	0	1	0	0	0	0	0	35
Oklahoma	-23,589	173	16	33	46	4	45	13	3	17	28	189	273
Payne	-4,293	7	0	-5	5	1	4	3	1	-2	0	7	109
Pontotoc	-481	-4	1	1	1	-2	-2	1	1	-2	-1	-3	147
Pottawatomie	-2,040	-8	3	-3	-2	0	-5	-1	3	3	0	-5	95
Seminole	-3,588	-3	-1	-3	1	-2	0	0	0	0	0	-4	67
Totals	-27,920	179	11	20	61	3	40	15	9	12	30	190	174
<b>Northeast</b>													
Adair	-1,079	1	-1	0	-1	0	1	0	0	0	0	0	54
Cherokee	1,349	14	-1	3	2	1	0	3	1	3	0	13	120
Craig	-1,396	-12	0	0	0	0	0	1	-13	0	0	-12	78
Creek	-5,185	-1	3	0	0	-1	1	1	1	0	0	2	64
Delaware	670	3	-2	2	2	0	0	1	0	0	-1	4	57
Haskell	-860	1	-3	-3	0	0	0	1	0	0	0	-2	18
Mayes	-1,734	5	-5	-2	1	-1	1	0	1	0	0	0	57
McIntosh	-221	3	-1	2	1	0	-1	0	0	0	0	2	60
Muskogee	-1,622	8	3	2	3	1	7	-2	1	-1	0	11	169
Nowata	-2,108	0	0	0	0	0	0	0	0	0	0	0	50
Okfuskee	-149	-3	-1	-4	0	0	1	0	0	-1	0	-4	43
Okmulgee	-5,110	-3	0	0	0	-1	-1	-1	1	-1	0	-3	77
Osage	-955	-3	0	-2	0	0	0	-1	0	0	0	-3	36
Ottawa	-3,239	0	0	-2	0	-1	0	0	3	0	0	0	85
Pawnee	-1,125	1	-1	1	0	-1	0	0	0	0	0	0	83
Rogers	1,670	7	3	3	-1	1	4	1	0	2	0	10	100
Sequoyah	1,328	2	3	2	1	0	1	1	0	0	0	5	50
Tulsa	-6,659	66	-11	-22	31	7	16	9	9	1	4	55	246
Wagoner	283	0	4	2	0	-1	1	0	1	1	0	4	38
Washington	-4,234	-3	2	5	2	-1	-3	-1	-3	0	0	-1	160
Totals	-30,376	86	-8	-13	41	3	28	13	2	4	3	81	157

in their respective specialties. Additionally, these primary care specialists replaced the 57 retiring MD GPs and the 59 DO GPs not replaced by new DO GPs.

The replacement by osteopathic physicians was not as effective. The Oklahoma osteopathic GME

programs produced 102 DO GPs for practice in the state. These did not completely replace the 161 DO GPs who left practice. At the beginning of 1990 there were 59 fewer DO GPs in practice than in 1984. Some of the DO GPs leaving practice were replaced by DO

**Table 5. 1984-1990 Change in Physician Specialties in Mid-Sized Regions**

(1984 estimate of population and 1990 US Census Data)

Region	Population Change	MD	DO	FGP	MED	PED	HOS	SUR	PSY	OB	Oth	Tot	Phy/Pop
<b>No. Central</b>													
Alfalfa	-784	1	-1	-1	0	-1	0	0	0	0	0	-2	47
Garfield	-10,465	-5	-9	-10	2	-1	0	-1	0	-4	0	-14	194
Grant	-1,011	-2	0	-1	0	0	-1	0	0	0	0	-2	70
Kay	-4,844	-1	4	0	0	0	4	-1	1	-1	0	3	144
Major	-1,645	0	-1	-1	0	0	0	0	0	0	0	-1	37
Noble	-955	3	-1	1	0	0	0	1	0	0	0	2	72
Woods	-1,897	-3	-4	-6	1	0	-1	-1	0	0	0	-7	55
Totals	-21,601	-7	-12	-18	3	-2	2	-2	1	-5	0	-21	139
<b>S. Central</b>													
Carter	-3,981	-4	-1	-5	1	-1	3	0	0	-1	-2	-5	140
Jefferson	-1,590	1	-1	0	0	0	0	0	0	0	0	0	57
Johnson	-868	2	0	2	0	0	0	0	0	0	0	2	60
Love	357	-1	0	-1	0	0	0	0	0	0	0	-1	25
Marshall	-671	2	-3	-2	1	0	0	0	0	0	0	-1	55
Murray	-1,358	-3	1	-1	1	0	-1	-1	0	0	0	-2	66
Totals	-8,111	-3	-4	-7	3	-1	2	-1	0	-1	-2	-7	95
<b>Southeast</b>													
Atoka	-522	0	-1	-2	0	1	0	0	0	0	0	-1	31
Bryan	289	4	6	2	0	0	3	5	0	0	0	10	87
Choctaw	-1,598	0	-4	-4	0	-1	0	0	0	1	0	-4	52
Latimer	33	0	0	1	0	0	0	0	0	-1	0	0	68
LeFlore	670	7	4	0	5	1	1	2	0	2	0	11	88
McCurtain	-2,667	0	1	-1	1	0	0	1	0	0	0	1	54
Pittsburg	-1,819	-9	2	2	0	-2	-1	-3	-3	0	0	-7	108
Pushmataha	-908	1	-1	1	0	-1	0	0	0	0	0	0	36
Totals	-6,517	3	7	-1	6	-2	3	5	-3	2	0	10	76
<b>Southwest</b>													
Beckham	-7,588	1	0	-3	1	0	2	0	1	0	0	1	112
Comanche	-10,614	20	16	14	-3	-2	7	2	7	4	7	36	127
Cotton	-549	0	-4	-3	0	0	0	0	0	0	-1	-4	15
Custer	-5,703	-5	-1	-4	0	-1	0	1	-1	0	-1	-6	104
Dewey	-1,149	-1	-1	-1	0	0	0	-1	0	0	0	-2	36
Greer	-841	2	1	2	0	0	1	0	0	0	0	3	122
Harmon	-807	2	0	2	0	0	0	0	0	0	0	2	158
Jackson	-2,036	-9	3	-4	1	-1	2	-1	0	-3	0	-6	87
Kiowa	-2,053	-3	1	-2	0	0	0	0	0	0	0	-2	53
Roger Mill	-2,153	0	-1	-1	0	0	0	0	0	0	0	-1	48
Stephens	-4,101	2	-4	-3	0	2	1	-3	-0	1	0	-2	92
Tillman	-1,816	1	0	1	0	0	0	0	0	0	0	1	58
Washita	-6,059	-1	-2	-3	-1	0	0	0	0	0	1	-3	35
Totals	-45,469	9	8	-5	-2	-2	13	-2	7	2	6	17	1 01

Table 6. 1984-1990 Change in Physician Specialties in Northwest Region

Region	Population Change	MD	DO	FGP	MED	PED	HOS	SUR	PSY	OB	Oth	Tot	Phy/Pop
<b>Northwest</b>													
Beaver	-1,377	-1	0	-1	0	0	0	0	0	0	0	-1	33
Cimarron	-699	0	-1	-1	0	0	0	0	0	0	0	-1	61
Ellis	-2,203	2	0	1	1	0	1	-2	0	1	0	2	200
Harper	-937	0	-2	-2	0	0	0	0	0	0	0	-2	74
Texas	-1,781	-1	-2	-5	-1	1	1	1	0	0	0	-3	85
Woodward	-5,324	8	1	0	3	1	0	2	2	1	0	9	137
Totals	-12,321	8	-4	-8	3	2	2	1	2	2	0	4	105

physicians who completed primary care residencies. In 1990 there were 299 more primary care specialists than in 1984. Twenty-two of these 299 were osteopathic specialists in primary care fields. There were 7 DO FPs, 1 DO preventive medicine specialist, 3 DO internists, 6 DO pediatricians, and 5 DO OB-GYN specialists.

**Specialty Mix.** The majority (54%) of the Oklahoma GME graduates entering practice in Oklahoma were primary care physicians. GME programs graduated 401 primary care physicians and 339 other specialists for practice in the state. Since nearly all of the primary care graduates replaced retiring physicians, 97% or 267 of the net gain in physicians was in other specialties. Of the estimated 403 physicians replaced by Oklahoma GME graduates, 278 or 69% were from the primary care specialties. This requirement for replacement of retiring physicians creates an impressive need for the continued training of many primary care physicians.

To meet the growing technological demands of medicine, Oklahoma gained many needed specialists. The 90 additional hospital-based specialists fill positions in the expanding hospitals located in the population centers of Oklahoma's economic regions. Emergency medicine, pathology, nuclear medicine, and physical medicine specialties all recruited physicians trained outside Oklahoma in addition to retaining those who graduated from Oklahoma GME programs. Anesthesiology and radiology experienced a modest number of retiring practitioners and were able to train and retain GME graduate physicians to replace those leaving practice. They also recruited others to increase the number of physicians in these specialties.

Some general surgeons and thoracic surgeons were lost to Oklahoma practice, and neither retention nor recruitment were sufficient to replace them. All

other surgical specialties experienced gains, which may indicate the relative youth of the physicians in these fields. The medical specialties that perform technical procedures (cardiology, gastroenterology, and pulmonary) increased, while those specialties which provide primarily consultation (allergy, infectious disease, and endocrinology) decreased. The pediatric subspecialties lost physicians. Over this time, hospital neonatal units increased and the neonatology physicians needed to staff the units increased. Although there were substantial regional changes in the number of psychiatrists due to staffing changes in state hospitals, the overall number of psychiatrists increased.

**Geographic Variations in Physician Distribution.** The changing geographic distribution of physicians reflects the large attrition of GPs, the consolidation of hospital services into regional medical centers, and the specialization of physicians.

The supply of new FP and GP physicians was insufficient to meet their attrition in each region except the Central (Oklahoma City) region. However, six of the seven regions gained specialist physicians, particularly hospital-based and medicine specialists.

The consolidation of services into regional medical centers and urban referral hospitals stimulated a change in specialty mix for all regions. Although, the number of physicians remains fairly constant, the generalist physicians are being replaced by both primary care specialists and other specialists who provide a more sophisticated range of services in small communities.

The gain of 190 more physicians to the Central region may reflect the growth of the Health Sciences Center in Oklahoma City. All but one of the added physicians in the Central region were in Oklahoma County. The 16 other counties experienced a balance of gains and losses, giving a net gain of 1.



The increase in medical specialists in 27 counties probably reflects general internal medicine physicians performing the role of generalist for adult patients, as well as the growth of regional medical centers. The failure to replace the medical specialists in 6 counties may reflect a shift in population and the regionalization of hospitals in nearby counties.

The growth in family and general practice in 25 counties probably reflects the increase in population in these areas. The losses in 40 counties may reflect the loss of people from small rural areas to adjacent counties and the replacement of GPs with other specialists in regional medical centers.

The gain of hospital specialties in 25 counties and the gain of surgeons in 21 counties may reflect the regionalization of medical centers throughout the state. The comparable losses of hospital-based physicians in 12 counties and surgeons in 17 counties likely mirrors the closing of some smaller rural hospitals.

## Conclusion

From 1984 to 1990, the physician manpower of Oklahoma changed substantially. There was a progressive replacement of retiring GPs with family practice, internal medicine, pediatrics, and OB-GYN specialists and osteopathic general practitioners. The size of the communities, where these primary care specialists entered practice, was slightly larger than the towns in which the GPs of bygone days settled. The number of new osteopathic GPs has been insufficient to replace the number of DO GPs leaving practice. Although DO primary care specialists are contributing to the replacement of retiring DO GPs, the aggregate numbers of DOs in Oklahoma was less in 1990 than in 1984.

If there was a "physician glut" in 1990, as predicted by the GMENAC study, it did not materialize for Oklahoma. In fact, the predictions of physician supply made by Duffy, Lewis, and Miller in 1986 have fallen short. The increasing supply of physicians in other parts of the country is not benefiting Oklahoma, especially in the primary care fields. Oklahoma's primary care education programs are as vital today as ever to maintaining the supply of physicians for the state.

Regionalization with full-service hospitals and specialist physicians in nearby communities is replacing solo GP services in some small communities. Smaller communities receive increasingly sophisticated medical care at a reasonable travel distance from home.

The large tertiary medical centers in Oklahoma City and Tulsa are growing, with Oklahoma City outstripping Tulsa almost 2 to 1. These centers provide high quality technological medical services. Every specialty is available in each of these cities.

The public funding through PMTC for primary care residency programs and rural practice incentives has been successful.<sup>9</sup> That 54% of the GME graduates who remain in Oklahoma for practice are in the primary care fields is testimony to the effectiveness of these programs. The marginal increase of 7 primary care physicians in six years highlights the enormous task GME programs have to replace the physicians retiring from practice.

Oklahoma's public policy on physician manpower must guarantee a steady supply of specialists and primary care physicians. The replacement of some solo practice GPs with specialists practicing in regional medical centers provides higher quality, more acceptable, and more appropriate care for all the citizens of Oklahoma.

Oklahoma, as well as the nation, needs a coordinated plan for physician manpower supply. The policy which drives the plan must focus on the output of graduate medical education, not medical school entrance or medical student preferences. A plan may provide a sufficient physician supply for the ongoing replacement of retiring generalist physicians and the growth in needed specialties. Failure to develop a plan for graduate medical education will leave generalist and specialist physician production to random and unpredictable variables. □

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# Leaders in Medicine: Robert G. Tompkins, MD

Story by Richard Green  
Photography by Victor R. Rivas

Begun in 1981, the Leaders in Medicine series recognizes some of Oklahoma's most outstanding physicians and the contributions they have made to their communities and profession.  
This is the twenty-first article in the series.

The home of Robert Tompkins is not only his castle, it also reveals much about his identity. He is surrounded—nearly engulfed—by an amazing collection of international artwork, artifacts, and books as well as mementos from his personal and professional life. It's like some sort of avant-garde museum... with Bob Tompkins as curator. And like any competent curator of a permanent collection, Bob can expound on individual pieces appropriate to the visitor's knowledge and interest.

Starting with the specific, an incensor, say, given to him by an old Guatemalan Indian medicine man, Tompkins may then tell you more about the shaman or the town in which he lived, Santiago-Atitlan, or why he, Tompkins—a very different medical man—was there. As he leads the tour, he walks

slowly and is somewhat stooped, not due to age (he is 69) but to the ravages of more than a half century of rheumatoid arthritis. He remembers almost 40 years ago marveling that none of the patients in the Seattle hospital's rheumatology clinic pointed out the irony of being treated by an arthritic man in such bad shape. But, Tompkins gets around much better today than four years ago, when he moved back into this house which had been empty and for sale during his year in Rome.

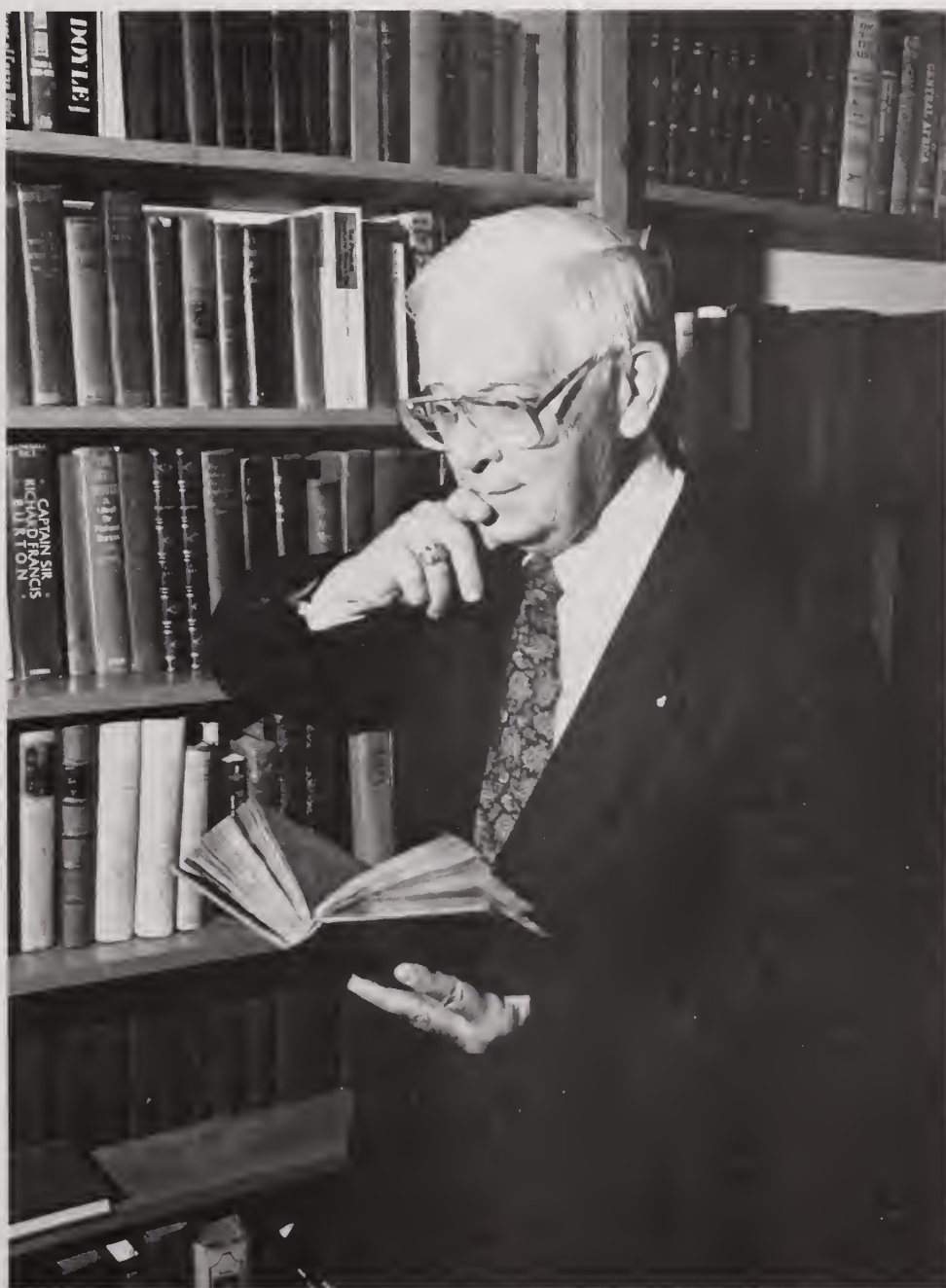
His large collection of books includes many first editions dating to the seventeenth and eighteenth centuries. Some are in his library at home, while others are on display in the Robert G. Tompkins Health Sciences Library at Tulsa's Saint Francis Hospital.

It's fitting for a library to be

named for a scholar. And like many scholarly people, Bob Tompkins can seem to be somewhat unapproachable. Although his practical definition of *friend* evidently is quite liberal, one long-time friend says Bob has few if any really intimate friends, suggesting perhaps that no one can fill the void left by the passing of the two most influential people of his adult life.

One was his wife, Rosemary, a beautiful, vivacious nurse, who bore him four children in 12 years of wedded bliss and suddenly died—shortly after John F. Kennedy was elected president. Though only 37 years old and with his most productive professional years ahead, Tompkins never married again.

The other person was William K. Warren. A self-made multimillionaire in the oil and gas business, Warren sold his company in the



Tompkins browses through a favorite book in his extensive home library.



1950s in order to develop the best hospital money could buy, way out in the middle of nowhere, on a hill at 61st and Yale. Warren's main man in this ambitious (some said foolhardy) enterprise was Bob Tompkins.

\* \* \*

**R**obert George Tompkins was born in Portland, Oregon, in 1923. His sister, Ruth, was born two years later, after their parents, George and Minnie Tompkins, had moved north to Washington state.

Bob's interest in medicine started with his Boy Scout troop's training in first aid. And one day, the shy, diffident teenager summoned the courage to tell the family doctor about his interest. "He looked at me like I'd tried to borrow twenty bucks. Then he said, 'I wouldn't even consider it,' and drove off."

However, under his senior picture in the high school yearbook, the caption read, "Will go to medical school at either Northwestern or Stanford." He was such a poor kid, he recalls, that such grandiose plans made his classmates laugh. But he worked in Tacoma factories for a year following graduation, then entered the University of Washington in 1940.

During World War II, Tompkins belonged to the university's infantry ROTC, marching, drilling, learning to shoot trench mortars and machine guns and, in simulated hand-to-hand combat, how to kill the enemy with a knife or strangling wire. He also applied to medical school at Northwestern University in Evanston, Illinois. By 1943, he was prepared to go either way. Shortly before graduation, he received his induction notice. But the very next day, the same draft board ordered him to

report to medical school at Northwestern. When he called for clarification—Did they want him to enter the high mortality ranks of a junior grade lieutenant in an infantry division or become a medical student?—he must have been holding his breath. They told him to go to medical school.

\* \* \*

**D**espite his love of reading and his intellectual curiosity, he was unschooled culturally. As a child in a poor family and later as a pre-med major, Bob had little if any exposure to disciplines other than science. But that started to change as soon as he hit Evanston.

He had been ordered to report to medical school by June 1, 1944, but the school year didn't begin until October. Instead of pointing this out and risking an immediate induction (the Army will accommodate you now!), Bob took three courses that appealed to him: the

works of Shakespeare, the history of World War I taught by a former Latvian baroness who was also practicing international law, and an anthropology course on the Negro in America.

In dispensing with four years of medical school in a half hour or so, Tompkins characterized many of the professors as stodgy and unbending but dignified, while the students were a bunch of smart but zany guys just trying to survive. The unwritten rule at the medical school was don't cross anybody and keep your nose clean."

One day several of the students violated the rule by complaining in a restroom about embryologist Wesley Arey's big semester test. "One said he was a 'goddamn old sonofabitch' and many others chimed in," Tompkins says. "The next day, Dr. Arey announced in class that he had been sitting in one of the restroom stalls and had overheard their critical comments. As he slowly gazed about the class-



Dr Richard A. Marshall (r), director of medical education at St. Francis Hospital, shares a story with Bob Tompkins.

room, you could have heard a pin drop. After an eternity of waiting, Prof. Arey said that referring to a man in the prime of life as 'old' had hurt his feelings very much.

"Well, the fellas all loved him after that and after he got run down by a horse crossing a bridal path in Lincoln Park, we all chipped in and sent to his hospital room one of those big floral horseshoes."

Tompkins lived in a big medical fraternity house just off the infamous (for parties) Rush Street. "You never could tell who might wander into the house at night," he says.

Tompkins later left the house for room and board and \$20 a month as an extern at Columbus Hospital. As a result, he was not only doing histories and physicals, but at times he delivered babies and performed other procedures far beyond his classmates' endeavors. The risk was possible expulsion from school if a notorious surgeon had learned of Tompkins' job. He said externships were a harmful corruption of the medical education system.

The ultimate benefit to Tompkins of Columbus Hospital, however, was in meeting a student nurse, a Polish Catholic named Rosemary Nowicki. "I thought she had the most beautiful auburn hair I'd ever seen," Tompkins says. "We started dating which was risky for her because the nuns had a rule that student nurses caught dating medical students or doctors would be expelled. Since we both lived in the hospital, we'd leave separately and meet in the park across the street. Since my income was twenty bucks a month, we did a lot of free things. I couldn't believe my luck, that this beautiful, vivacious, popular girl was going out with me.

"But one day after we'd been married several years, she said, apropos of nothing, 'Bob, do you

know why I married you?' I said I didn't. And she said, 'It was because I thought you'd help me get to heaven.'"

\* \* \*

**B**ob and Rosemary graduated in 1948 and were married in his hometown of Tacoma in June. A month later they both reported to Harborview Hospital in Seattle, he for his internship and she to begin special duty nursing.

Though in medical school he had liked all of his clinical rotations (except psychiatry, wherein asthma had been described by an analyst as the "primordial scream

problems and subjects. And since Harborview got much of the city's flotsam and jetsam, Tompkins was becoming increasingly judgmental and, as he says, "a pretty tough cookie."

An incident in the ER one day woke him up. "A lot of chronic alcoholics would turn up and many would be covered with vomit, blood and lice. I would give 'em an intramuscular sedative for the shakes but it burned like bejesus. This day, I was carrying the syringe, probably like a weapon, toward this bunch of alcoholics and when they saw me, they got up and skedaddled. And I thought, hey, this isn't how I was brought up and

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*During his interview for a fellowship at the Mayo Clinic, Tompkins was asked why he wanted to practice medicine. "Because it's fun," he blurted out.*

---

of the child deprived of its mother's love"), he had decided surgery wasn't possible. As early as high school, he had developed the first symptoms of a painful affliction that would come and go but wasn't diagnosed until his internship. "One day I was walking in pain down the hall and the rheumatologist K.K. Sherwood stopped me and announced that I had rheumatoid spondylitis."

By that time, Tompkins already had decided on an internal medicine residency at Harborview. Some members of the hospital's top medical staff had been imported from Harvard and though they were a high-powered lot, they also had the tendency to regard patients as

isn't the kind of doctor I want to be."

That incident may have played a part in Tompkins' decision to seek a fellowship at the nation's mecca for quality patient care: the Mayo Clinic. He was interviewed for the position by a famous surgeon named Balfour. Though he was quite prominent and a senior man at Mayo's, Dr. Balfour was warm and friendly. Tompkins became so comfortable during the interview that when Balfour asked him why he wanted to practice medicine, he blurted out, "Because it's fun."

The old man, Tompkins says, lit up like a candle. "That's the way I feel," Balfour said. "After almost 50 years of surgery I can hardly



wait to get into the OR every morning."

Tompkins' three and one-half years as an internal medicine and cardiology fellow at the Mayo Clinic expanded and refined his clinical skills and provided him with a sound base for research. He was part of a small cardiac physiology research team that was, among other things, doing all of Mayo's heart catheterizations and performing experiments on G forces that led to the development of the pressurized suits for pilots.

By then, the Tompkinses had three children. Timothy had been born in Seattle, while Mary and George were born in Rochester. And though severe bouts of vomiting accompanied each of Rosemary's pregnancies, she worked as a chest surgery nurse at Mayo's to help make ends meet. She was so adept at her job that Tompkins says the heart specialists probably were sorrier to see her go than they were him.

Tompkins loved the stimulation, the cutting-edge technology, the esprit de corps among both senior and junior staff members, in short, everything about the Mayo Clinic. But the severe winters exacerbated his arthritis, and in 1953, the final year of his fellowship, he reluctantly concluded that he should practice in a warmer climate. About then, a wealthy Tulsa department store magnate who wanted a Mayo-trained cardiologist in town, heard about Tompkins and flew him and Rosemary down for a looksee. And though Tompkins had several other offers, Tulsa was their choice.

\* \* \*

After the family had settled into Tulsa, Bob's conscience began bothering him. As a devout Catho-



An effective team (l to r): Bob Lissau, president of the Warren Foundation; Bob Tompkins, chief advisor to W.K. Warren during the building of St. Francis Hospital; and William K. Warren, Jr., chairman of the Warren Foundation.

lic whose three sisters were all nuns, Rosemary alone was raising the children in the faith. Tompkins felt uneasy about not playing a part in the kids' religious upbringing. And, he was unhappy about his insouciance toward religion because he realized his attitude was rooted in the superficial childhood impressions of "a half-baked Methodist." Rosemary's ardent Catholicism probably bothered him as well. And though she doubtless prayed for his conversion, she never badgered him.

Her prayers may have been answered in 1956 in the form of Monsignor Anthony Chojecki. He was the chaplain of Monte Cassino school, which was located across the Tompkinses' back fence. "We met at a time when I had nothing but questions about religion," Tompkins says.

With doctorates in both theology and philosophy from the Dominican College in Rome, Chojecki was well-prepared to serve as

Tompkins' mentor in what became a two-year intellectual examination. What is the authority of the church? Of the Pope? What is the validity of the sacraments? Worshipping of saints? Going to confession? With Chojecki's knowledge and eloquence and Tompkins' own study, he got satisfying answers to tough questions like these. And this understanding helped to fuel his own faith, just before he needed it most.

To Rosemary's delight, Bob became a Catholic in 1958 and a year later, their fourth child, Robert, was born. This was an idyllic time for the family. Professionally, Tompkins was about to embark on a new course.

He had had a good internal medicine practice downtown and had helped establish the state's first heart catheterization lab at Saint John's hospital. But after acquiring a new patient named W.K. Warren, his career plans began to change.



Warren had recently sold his petroleum company to Gulf Oil and established the Warren Foundation, through which he intended to build a first-class hospital. As a multimillionaire, he could certainly afford to erect the building, but many observers thought he was crazy to build it in the wilderness of 61st and Yale. He was betting Tulsa would grow that way and hedged his bet by enticing the Springer Clinic to relocate nearby and by building a new professional building on his property. Tompkins, who had been Warren's chief advisor on the project, was one of the building's first tenants and when the 150-bed Saint Francis Hospital opened in October 1959, Dr. Tompkins admitted the third and fifth patients.

Meanwhile, Rosemary was a ball of fire, raising the kids and doing volunteer work on behalf of civic music projects and (a very unpopular cause at the time) mental health. Perhaps she had been listening to Sen. John F. Kennedy, who in his quest to be President was calling for mental health reforms.

A few days after Kennedy had become president-elect, Rosemary woke up feeling flu-like. Bob took the kids to school and the girl (who lived with them) was there looking after Bobby, who was a year old. Later that morning, Rosemary complained of dizziness but told the girl not to call the family's doctor. Instead of going home for lunch, as he liked to do, Bob was running behind and went straight from the hospital to his office.

At about noon, Tompkins took a call from the girl, who was frantic. Mrs. Tompkins was asleep on the couch and she couldn't wake her. By the time Bob reached home, Rosemary was dead.

As the tragedy enveloped the

family and their friends and loved ones, only Mary, who was 7, seemed to understand. "I know why God took Mommy," she told her father. "There are lots of babies in Heaven who don't have a good mommy and now they do."

As Tompkins quotes his daughter from 31 years ago, his eyes are misty and his voice thickens.

Was he angry with God? Pausing momentarily, he says if he could have asked for a miracle to bring her back, he would not have done so. "Because when you're in Heaven, you're perfect."

\* \* \*

Through the 1960s, Tompkins became more and more involved with Saint Francis. He was elected the first chief of medicine and elected to the board and presidency of the medical staff in 1964. But his role changed permanently in 1968 when he accepted the offer of Bill Warren, Jr., to initiate a new posi-



Dr. Rollie Rhodes (l), president of the St. Francis medical staff in the 1970s, admires one of the many valuable books donated by Tompkins to the St. Francis library which bears his name.



Cardiologist John Kalbfleisch (l) was named by Medical Director Tompkins to head the hospital's cardiovascular services.

tion at the hospital. They would call it "medical director" and so far as they knew, no other hospital in the nation had such an animal.

This innovation showed the Warrens' confidence in Tompkins, and their astuteness and good judgment. They realized that a first-rate tertiary care hospital couldn't be developed cheaply nor could it be attained or sustained by just spending vast amounts of money and having good intentions. "Bob was our guiding light," Bill says. "He was and is a great man to put your money behind clinically or research-wise. Dad trusted him implicitly. For example, we probably wouldn't have had a neonatology unit, period, let alone the best in the state, without Dr. Tompkins' insistence because neonatology is traditionally regarded as a 'loss leader.'"

Tompkins was mainly responsible for recruiting a top-flight medical staff. As one of his first actions as medical director, Tompkins recruited Dr. John



For a man who dreamed of entering the priesthood, a personal meeting in Rome with Pope John Paul II was a memorable occasion.

Kalbfleisch to head cardiovascular services. "The ICU and CCU were overwhelming and Bob said when I needed a cardiac cath lab, we'd build it with state of the art equipment," Kalbfleisch says. "I knew he was a man of his word and we just shook on it."

He also recruited twice (once, he got away) the highly regarded Dr. Richard Marshall to be head of the hospital's medical education department. As the story goes, Bob told Mr. Warren that Dick Marshall was a superb teacher and a salary of \$25,000 was proposed. Mr. Warren supposedly said no doctor is worth \$25,000 but okayed the deal.

"Bob's greatest asset as medical director was in dealing effectively with people," says Dr. Rollie Rhodes, who was president of the medical staff during the 1970s. "In many hospitals, there's a wall dividing the administration from the medical staff, but I think Mr. Warren saw that Bob could be a cohesive factor."

"Each side thought of Dr. T as being on their side," agrees Barbara

Reynolds, assistant administrator of Saint Francis. "As medical director, he was respected by everyone because he had a rare combination of attributes for the job: he had encyclopedic knowledge, high ethical and moral standards, and was diplomatic and articulate. What more could you ask?"

Saint Francis grew from 150 to 935 beds and under Tompkins' leadership developed some of the finest services in the nation. With the assistance of Reynolds and against some initial opposition among the medical staff, he developed a hospital-wide quality assurance program in 1979, not because government intervention loomed, but because he believed it could improve patient care.

\* \* \*

**A**fter almost two decades on the job, Tompkins started thinking more seriously about a dream he'd had for several years. He had served the Catholic Church often and well since the sixties, receiving two of the Church's highest honors for

laymen. In 1976, he was decorated Knight of the Equestrian Order of the Holy Sepulchre of Jerusalem and in 1983 was made Knight of the Sovereign Military Order of Malta.

On behalf of an archdiocesan project, Tompkins had made several trips to provide medical care and help erect a hospital for the Indians living in the remote town of Santiago Atitlan, Guatemala. He was so taken with the people and awed by their medical needs that he and Bishop Victor Reed bought a house there. Bob intended to become Santiago Atitlan's general practitioner. The plan was scotched, however, in a wave of terrorism and political murders. One of the victims was Tompkins' friend and a martyr for social justice and human rights, the archdiocesan priest Stanley Rother.

Bob's dream was to enter the priesthood. He told Rollie Rhodes that for a man, the priesthood was the ultimate in service to the Church. Now that his children were grown and gone, he could do it. His old friend, Bishop Ganter of Beaumont, Texas had agreed to sponsor him. He would study in Rome at the Pontificio Collegio Beda.

Rhodes wasn't surprised; in a sense, it was a logical progression for Bob. "But in another way, his decision was not rational," says Rhodes. "His arthritis was really giving him problems. At times, you could see how painful it was for him to walk. His son George, a Tulsa family physician, told me he didn't know why in the world his dad was going to do this."

To mollify his children and assure himself, Tompkins had a complete physical. "The rheumatologists told me that perhaps in 10 years I would need some



prosthetic work done, particularly on a knee. Well, shoot, I figured I was home free."

So, in 1987, Tompkins put his house up for sale and flew to Rome. The Beda was a seminary for older men coming from other careers. Among his classmates was another physician, an athletic coach, and three Episcopal priests; their ages ranged from the mid-30s to 64, Bob's age. He was in a small room, shower down the hall. But the rules weren't nearly as rigid as he was prepared for. "We joked that the only rule was that you couldn't light your cigar from the sanctuary lamp."

Classes were in the morning with studying in the afternoon. Though a few faculty members weren't up to snuff, most were very scholarly and inspiring. Tompkins did so well that the vice-rector told him that he could complete the studies in two years, half of the normal course.

But near the end of the first year, the pain in his right knee was so bad that he was actually dragging that leg up stairs. When he and his classmates toured Rome and the nearby Vatican City, "everybody had to wait on me to catch up. And Rome's cobblestone streets made walking excruciating at times."

He flew home to be checked out and was dismayed to learn that he would need a knee prosthesis not in 10 years but immediately. In the months of his rehabilitation, he decided his dream couldn't be realized. And for the first time in his career, Tompkins was adrift.

But not for long. Bill Lissau, president of the Warren Foundation asked him to resume a job that he'd held since 1969: executive director of the W.K. Warren Medical Research Center. Though Mr. Warren always had wanted a sig-

nificant research component at Saint Francis, the effort had not taken off because of the difficulty of attracting top researchers to a non-medical center setting.

Things changed in 1985, however, when Dr. Patrick McKee be-



Looking to the future, Tompkins says simply, "I'm not afraid."

came chairman of the Department of Medicine at the University of Oklahoma Health Sciences Center. As a former Howard Hughes Investigator and professor of medicine at Duke University, McKee had an excellent research record and the leadership ability to develop a major research enterprise.

Tompkins and McKee talked the same language and respected and trusted each other. So with Tompkins' strong recommendation, the Warren family decided to make a substantial investment in OU, in terms of research support, endowed

research chairs, and matching funds for one of the state's centers of excellence, the Oklahoma Center for Molecular Medicine. Since 1985, the Warren Foundation has invested about \$16 million and everybody is very pleased and excited about the future.

In addition to resuming his old job, Tompkins was also asked by Lissau to be executive director of research of the Laureate Psychiatric Center. This was the brainchild of Bill Warren, Jr., who as his father did, thinks only in terms of world-class facilities. Through liaisons with the World Health Organization and Dr. Joseph Westermeyer, former chairman of OU's Department of Psychiatry, Tompkins has the new center's research component off to a solid beginning.

Now 69 years old, Tompkins has no plans to retire; with new joint prostheses, he can once again climb stairs and often does. "I'm surprised at times to hear these doctors call me sir, because I often feel like an intern myself, full of pee and vinegar."

When Tompkins received the 1991 Distinguished Medical Service Award from the OU College of Medicine, Dr. McKee gave his friend a long introduction. He felt it was important that the audience know that Dr. Tompkins was a good deal more than the sum of his titles. McKee said Tompkins will be among those who leave the world better than they found it.

Tompkins says he is not anxious to leave the world, but doesn't fear the prospect. "It's only a flash of time that we're in this world. And as it says in the Scriptures, in Heaven there will be no more weeping, pain, sorrow, or parting. And I believe we will rejoin those whom we loved in this world. . . . No, I'm not afraid." [J]



## A Journey

J. Michael Pontious, MD

**A physician offers his observations on the predicament of AIDS patients in Oklahoma.**

**T**hey show up from all over. I feel overwhelmed by the stories and the illness. I am unsure of where to start, but I always marvel at the stories.

There are the stories of being unable to obtain help from anyone, even stories of not being able to obtain help from family. Often, all the friends have gone, or died or are so ill that there is nothing they can do.

The patients return to rural Oklahoma, the land from which they embarked. Native sons who left for a variety of reasons, all seeking fortune, freedom, or a better life. Now they have returned to die, to spend their last days.

A pioneer mentality exists here, a mentality that is often unforgiving of views not consistent with the work ethic and middle America's values. The mindset is one of rigid thinking. Not reactionary thinking, like those stereotypes of "southern rednecks," yet rigid. It is not a comfortable place for anyone who thinks or lives differently. Tolerance is obtained in a complicated process, often a process involving illness or death.

Bearing this experience, a pale wasted gentleman walks into my office. His eyes are deep set. I can tell that he is fatigued by the mere ride up an elevator and the short walk into the waiting room.

In his journey he has sat in many physicians' offices. The process entails a never-ending series of questions, further tests, further exams, ...further futility.

This office is no different from the others. The process seemed copied from many previous encounters. One thing that irritates me in the interview process is the continual interrupting by his mother, who accompanies him during the visit. Recently returned from California, he has AIDS. She thinks there is something I can do. She thinks there is time to stall this until science can come up with an intervention. I maintain my professional distance, and outline the protocol that will deal with the illness.

He has heard all this before. He agrees to the approach. There is this "matter of fact" type of manner to his actions. I begin the process of trying to find out how far along the journey he has come. His eyes ask another question, a much more menacing question: "How far do I have to go?" This is the question I have the hardest time answering. After all, I see myself as a man of hope, a caring soul.

There is no hope for a cure. Often there is no further time. Often I am faced with a living death, but I cannot bring myself to say or even think about this actuality.

I know there are other battles to be fought. I realize that this man and his family have driven one hundred miles to see me. It is not because I am an expert. Rather, it is because no one else is willing to fight this battle or deal with this disease.

There will be the letters to the welfare department to obtain assistance from them. There will be the prescriptions that need to be filled in town and not in their community. There will be the discussions with nurses, and the assurances that one can care for these patients safely. And there will be discussions about

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why I really don't know how this happened. There will be the calls to the specialists in Oklahoma City because of the peculiarity I have not seen before. They will assure me that I am doing all that can be done. There will be that call to Hospice, only to find out they do not travel outside this county. There will be the discussion with hospital administrators about the issue of uncompensated care. There will be the questions, from those whom I teach, about my motivation. There will be the surgeon who asks me if I really want to operate on this patient.

Then there is the family. How do you explain this to neighbors? Is it appropriate to have children around the patient? They have a look of relief when I explain that the mass I have found is probably a cancer. Cancer is understandable and acceptable in rural Oklahoma; AIDS is not. Who is going to care for this man when he is unable to support his weight and relies on those around him to feed, bathe, and sustain him? Who will oversee the medication? Who will clean the diarrhea or urine? Who will linger to care?

This pioneer mentality, which had driven these

sons away from the plains, and continues to hold them in disbelief, somehow arises to receive them home. This mentality, which places great importance in family caring for family, takes up the challenge and fulfills the sense of benevolence.

I have perceived no complaints.

I have heard no murmuring.

I have seen hard, heart-wrenching work for an enterprise that has little reward.

For some unknown reason this journey encourages me to walk into that next exam room and know that there is something triumphant about the human spirit. Although it saddens me that it has taken something of this magnitude to focus society's attention, I sense a purpose to it all.

Although it is not entirely clear to me, in the face of death, I find encouragement. J

#### The Author

J. Michael Pontious, MD, is assistant professor, Department of Family Practice, University of Oklahoma College of Medicine, and program director, Garfield County Medical Society Family Practice Residency Program, Enid, Oklahoma.

**T**here is no short cut, nor "royal road," to the attainment of medical knowledge. The path which we have to pursue is long, difficult, and unsafe. In our progress, we must frequently take up our abode with death and corruption; we must adopt loathsome diseases for our familiar associates, or we shall never be thoroughly acquainted with their nature and dispositions; we must risk, nay even injure, our own health in order to be able to preserve or restore that of others.

— John Abernethy  
*Hunterian Oration, 1819*

# The Extended Clarence Thomas Hearing: Beyond Bias

John E. Poarch, MD

**The Clarence Thomas hearing draws comment from an Oklahoma psychiatrist.**

**B**oth sexes and all races could identify with Anita Hill and Clarence Thomas during the Supreme Court nomination hearing, although most of us were trying our best not to do so. Very few of us could identify with the senators sitting on the Judiciary Committee.

The complexity of the controversy prevented the establishment of clear accountability, and though we are still striving, we cannot successfully make a male versus female or a racial polarization of the dispute. We are still reeling with bewilderment. Nearly all people are at a loss when a storybook explanation with evil monsters, hapless victims, and heroic rescuers simply will not fit.

The entire nation was very curious and intrigued, but the hearing caused confusion, intense emphatic discomfort, and sometimes revulsion.

We humans often attempt to ignore, avoid, suppress, or repress emotions when we cannot resolve a conflict. The Senate did the same. The resulting narrow vote for confirmation was predicted prior to the extension of the hearing.

In my opinion, the issue resulted from overstimulation caused by success and power. Judge Thomas had worked diligently to achieve positions of increasing authority and prestige.

Anyone may reach a point of overstimulation; a passing of a threshold of control derived from heredity

plus environmental conditioning. Controls over our impulses may then break down just as we see in an agitated child trying to cope with the excitement of a happy birthday or Christmas celebration. No person has unlimited tolerance to stimulation.

We can speculate that Watergate was a result of President Nixon's overstimulation when he anticipated a second term in office. Gary Hart became indiscreet when a real chance to become President became possible. He then gave up the race, but his personal reward was the elimination of overstimulation.

When the televangelists Jim Bakker and Jimmy Swaggert reached the point of overstimulation, they acted out the very behaviors they had preached against. Police officers and judges can and may become criminals when they lose impulse control. Psychiatrists not infrequently become mentally ill.

When authority figures have difficulty with self-control, a common manifestation is abuse of their subordinates. The abused subordinate may seek a legal remedy, resign, or decide to accept the offensive actions. A decision to accept sometimes is the consequence of a desire to identify with, and vicariously share and participate in the authority status. Her staff colleagues conveyed the feeling that Professor Hill had a special position with Judge Thomas and was condescending at times.

Hill's allegation that Thomas believed she held the power to destroy his career revealed his fear of her, but it also showed an uncommon trust. In the event he achieved so much power as to threaten his stability, she believed she had an unwritten mandate

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to come forward and reveal the past. Regardless of her feelings or conscious motives, Professor Hill finally acquiesced to appear before the committee to fulfill the mandate.

Clarence Thomas's alleged advances toward Professor Hill and Angela Wright, if true, would be evidence that the degree of power he had at the times of their employment was marginally overstimulating to him. He was able to be discrete enough to keep his behavior from being obvious to other staff. The advances, if true, suggest that Hill and Thomas were very significant to each other.

The probability of Thomas being able to maintain even borderline control of his human impulses as a Justice of the Supreme Court *was* minimal before the extended hearing. Tolerance for success can be increased through withstanding emotional pain. I therefore hasten to add that the intense emotional pain Judge Thomas bore during the hearing may well have increased his tolerance for stimulation immeasurably. He *may* become a passible judge.

I was quite alarmed when Thomas expressed a preference for an assassin's bullet. The edge of his endurance seemed to be near, and his desire to withdraw was evident. Might he end his life if again under stress?

The federal deficit is an obvious indication that our nation has grave problems when it comes to saying "No." Clarence Thomas was confirmed by the

Senate just as permissive parents overlook their children's behavioral communications when the children are asking for aid with self-control due to overstimulation.

The continuing national discussions show how threatening this unfortunate event has been to the nation. The extreme displeasure the hearing has caused the country hopefully will press us toward taking more responsibility for our Washington representatives and civil servants. The recent House bank hot check scandal should reinforce such energies.

I know Anita and Clarence only through "media" exposure. Still, I firmly believe that we are overwhelmingly more alike than different. I felt compelled to write this article. Albeit the tripartite, fairly tale model with a storybook plot is essential to understanding human growth, development, and interaction, we must work to develop a phenomenological model of the human psyche that is as reliable as the laws of physics. □

**Acknowledgment**

I am grateful for editorial assistance provided by Ray McIntyre, MD.

**The Author**

John E. Poarch, MD, practices psychiatry in Oklahoma City. He is also a clinical professor at the University of Oklahoma Health Sciences Center and the author of *Limits: The Keystone of Emotional Growth*, Accelerated Development Inc., Muncie, Indiana.

**T**he cause of Lues venerea is obscure. Apparently, it is a dangerous and toxic disease contracted by contact or contamination. The poison seems to be without structure—at any rate, it cannot be seen—, does not exist, free, in nature, but vegetates in the secretions of the body which, so to speak, serve as carriers. Since it has no sharp edge, it can only enter through apertures, and be transmitted only by smearing secretions on the denuded parts.

— Johann Fernelii Ambiani  
[1506-1558]  
*Therapeutics*, Vol. VII

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*By-laws amendments, credentialing, contracts*

## AMA-HMSS provides legal assistance to members and to state HMSS

The American Medical Association's Health Law Division has assigned Denise Andreson, JD, to provide exclusive legal assistance to the AMA-HMSS and through them to the state hospital medical staff sections. Timely legal news and information is being disseminated from Ms Andreson's office to the membership of the AMA-HMSS and to the state HMSS chairmen and the state society liaisons.

The significance of this new legal assistance program to Oklahoma Hospital Medical Staffs cannot be overemphasized. In Oklahoma, hospital medical staffs are usually loosely organized and without the financial means to retain legal counsel. Hospitals, on the other hand, always retain legal counsel and many retain large law firms. Some larger hospitals in Oklahoma not only have local law firms but also retain prominent national hospital law firms such as Harty, Springer & Mattern.

Frequently hospital medical staffs accept the advice of the hospital's legal counsel in matters such as by-laws amendments and in other critical areas such as credentialing and exclusive contracts. Hospital legal advocates are counseling their clients (hospitals) to seek authority to make all decisions about exclusive contracting unilaterally, and to ensure that medical staff privileges terminate automatically with termination of exclusive contracts.

A recent example regarding by-laws is that of a southeastern United States hospital that retained the firm of Harty, Springer & Mattern to redraft the medical staff by-laws. A committee worked with the Harty firm on the amendments for ten months!

This by-laws committee was advised that antitrust concerns warranted removing from the medical staff by-laws all of the provisions involving due process and other important policies, and placing these provisions in a separate document. The hospital would be allowed to amend the document's provisions unilaterally; although the hospital would inform the medical staff of amendments, it would not be required to seek medical staff approval.

The medical staff's potential "conspiracy liability"

as alleged by the Harty position was discussed with AMA legal counsel along with the state medical association counsel, and the medical staff voted to reject these by-laws amendments.

Hospital legal counsel have consistently advocated hospital control of the medical staff and to deny recognition of the medical staff as an independent legal entity. This particular issue becomes more complex as increasing numbers of physicians become involved in salaried hospital positions and in exclusive contracts.

The Oklahoma State Medical Association-Hospital Medical Staff Section (OSMA-HMSS) recommends that, if your hospital medical staff encounters potential legal problems, you should either obtain adequate legal advice from your own attorney (not the hospital's attorney) or that you consult with the Oklahoma State Medical Association's legal counsel.

You may also obtain legal advice from the AMA-HMSS counsel, Denise C. Andreson, JD, through your OSMA-HMSS staff at the OSMA office or by contacting the chairman of the OSMA-HMSS.

— William O. Coleman, MD  
Chairman, OSMA-HMSS



AMA President John J. Ring, MD, visits with AMA Auxiliary President Susan Strebel (l) and OSMAA President Susan Paddock during his recent visit to Oklahoma City.



## AMA '92 *Physician Characteristics and Distribution* now available

The 1992 edition of the American Medical Association's *Physician Characteristics and Distribution* is now being distributed.

The book features detailed information of the distribution of physicians by specialty, sex, age, location, and medical education. The 1992 edition also includes expanded sections on physician characteristics, physician specialties, and physician/population ratios. It offers information about physicians on state, county, and metropolitan area bases and examines physician population trends from 1970 through 1990.

Among the interesting findings in the new edition are:

- In the period 1980-1990, the physician-to-population ratio increased 21.5%—to 237 physicians for every 100,000 civilians.
- The total number of physicians in 1990 was

615,421—an increase of 11.3% since 1985 and 31.6% since 1980.

- There were 360,995 physicians in office-based practice, a gain of 32.7% over the past decade.

- The top three specialties were internal medicine, general practice/family medicine, and pediatrics. The three specialties represented 209,722 (34.1%) physicians.

- Some 39.6% of US physicians were involved in primary care specialties, a proportion that has held relatively steady since 1980.

- Almost six of 10 physicians (58.2%) in the United States were board certified, an increase of 50.4% over the past 10 years.

- Female physicians increased at a rate that was almost four times greater than male physicians: 91.9% versus 23.7% respectively from 1980 to 1990.

- More than half of the physicians in the United States (51.9%) were 44 years of age or younger.

- The number of group practices has increased by 54.0%, from 10,762 in 1980 to 16,579 in 1988.

The AMA Physician Masterfile, a comprehensive database comprising all the nation's physicians and medical students, is the book's data source.

*Physician Characteristics and Distribution* can be ordered from the AMA by calling 1-800-621-8335. The book costs \$70 for AMA members and \$95 for non-members. □

### Announcement

**American Medical Association  
Hospital Medical Staff Section  
Nineteenth Assembly Meeting  
June 18-22, 1992**

Medical Staffs from the country are encouraged to elect a medical staff representative to participate in the AMA-HMSS Assembly Meeting June 18-22, 1992 at the Chicago Marriott Hotel, in Chicago, Illinois.

The HMSS Assembly provides medical staffs with a unique opportunity to discuss and participate in the policymaking process of the AMA. In addition to the Assembly Meeting, an educational program on:

- Option 1: Medical Staff Bylaws: Principles and Practices  
Option 2: Outcomes Management: A Medical Staff Issue

If you are unable to participate in the Chicago Meeting, we encourage you to call us with the name of your HMSS Representative.

For further information about the AMA-HMSS, please call (312) 464-4754 or 464-4761.

### Information scarce

## Student survey shows compliance with disabilities act comes slowly

Not only are services for disabled individuals difficult to find in Oklahoma, but most agency and service representatives have no idea where to tell clients to begin looking, according to surveys conducted by physical therapy students at the University of Oklahoma Health Sciences Center in Oklahoma City.

Students in the OU Department of Physical Therapy completed several group projects which analyzed wheelchair-bound services and access to those services in Oklahoma and the Oklahoma City metropolitan area. One of their more significant findings: out of a survey of 270 Oklahoma City area apartment complexes, only 2% actually were wheelchair accessible.

Also, a telephone survey of real estate agents in

**Disabilities act** *(continued)*

Oklahoma City revealed that none had any listings for wheelchair-accessible housing, and that none knew where any such housing could be found.

In addition to the struggle of finding a place to live, students found, the wheelchair-bound resident in Oklahoma will have a tough time getting — much less learning to drive — a customized vehicle. The University of Central Oklahoma, located in Edmond, is the only agency in the state which offers driving lessons for the disabled, and only two businesses at three locations in Oklahoma offer customization of vehicles for the disabled.

For someone with a disability, locating adaptive devices is a serious problem. "We were surprised to find that when we called the state Department of Human Services and the federal Department of Housing and Urban Development for assistance, we didn't get many answers," said student Ami Chitwood. "The information simply isn't available, and this is at the very offices which are supposed to be the main source of information in the state."

The students' project results come at a time when

the broad requirements of the 1990 Americans With Disabilities Act are taking effect. The act is a major step toward eliminating discrimination against the 43 million Americans who have a physical or mental disability, noted Kay Ahaus, OU adjunct assistant professor of physical therapy, who supervised the students' activities. The act has numerous requirements, among them a mandate that wheelchair users be provided access to all public business and service providers.

The students said they would like to see a service evolve for adults in Oklahoma similar to the OASIS project run by Children's Hospital of Oklahoma, which maintains a current listing of all services available to disabled children in the state. **J**

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## PRAMS gathering information on maternal and early infancy risks



Four years ago, Oklahoma was one of six states awarded collaborative funding from the Centers for Disease Control to develop and implement a population-based survey of new mothers. The project, known as the Pregnancy Risk Assessment Monitoring System (PRAMS), is administered through the Maternal and Child Health Service of the Oklahoma State Department of Health.

The purpose of PRAMS is to assist states in identifying the prevalence of previously uncollected maternal and early infancy risks leading to poor health outcomes. PRAMS also is used to target populations in need of risk reduction interventions.

PRAMS surveys approximately 200 mothers each month who are between four and six months postpartum. A stratified sampling approach based on four categories of birth weight is used to ensure adequate coverage of potential high risk groups. Oversampling occurs among mothers who deliver infants who are

low birth weight (less than 2,500 grams) or high birth weight (more than 4,000 grams). The questionnaire covers a variety of physical, behavioral, and sociological issues spanning from three months prior to conception to the early postpartum period. Topics of particular interest include smoking, alcohol use, nutrition, prenatal care, and infant health. The survey is linked to the birth certificate for additional outcome and demographic data.

Through three years of data collection, the project has surveyed more than 6,800 mothers. The overall response rate is 71%. Data are currently being disseminated through a quarterly newsletter, *The Oklahoma PRAMS-GRAM*, published by the *Maternal and Child Health Services*, and through conference presentations.

The success of the survey in Oklahoma and other participating sites has resulted in the expansion of PRAMS to eight additional states this past year. For further information about this project, contact Don Blose, (405) 271-6761. J

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## REACTION TIME

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### AIDS commentary and editorial shock infectious disease specialist

*To the Editor:* I am extremely surprised, and in fact, shocked at the decision of the JOURNAL to publish the commentary by Dr. Roy L. Forsythe, MD, in the February issue. Dr. Forsythe's comments were parochial, inflammatory, fraught with errors in logic, and riddled with scientific inaccuracies. I do not have a problem with the JOURNAL publishing a rebuttal argument to Dr. Karen G. Smallwood's paper, which preceded the comment by Dr. Forsythe; however, why would the JOURNAL publish such an obviously emotional appeal which has almost no scientific support? I am frankly embarrassed by this article and feel that it has a pejorative effect on what used to be a fine journal.

I am also in disagreement with the statement that you made in the Editorial which states, "An ethical society does not require the healer to risk personal

death to care for the fatally stricken." As physicians, we do this all the time and we are expected to. We deal with diseases that have much higher expected mortality rates than AIDS when exposure occurs to the care-giver from the patient. The risk of death for the physician was much higher when he treated tuberculosis at the turn of the century, yet few physicians refused to treat patients with consumption. You are entitled to your opinion, but I respectfully disagree with it.

I sincerely hope that your Consulting Editors will attempt to maintain higher standards than were exhibited in the February issue of the JOURNAL.

—Eric L. Westerman, MD  
Tulsa



## IN MEMORIAM

### 1991

Mark Duane Hopping, MD	May 1
William Alfred Cunningham, MD	May 13
Gilbert Wayne Tracy, MD	May 13
George Clifford Moore, MD	May 24
Daisy Gertrude Cotten, MD	May 26
Edward Woodrow Ellis, MD	May 28
Ronald I. Cramer, MD	June 16
Edward Tiffin Cook, Jr., MD	June 18
Arvin Craig Roberson, MD	July 15
John Berry Gilbert, MD	August 6
Frank Leo Bradley, MD	August 31
Rugie Reginald Coates, MD	September 15
James Byron Snow, MD	September 28
Howard Angus, MD	October 9
Jack Owen Alexander, MD	October 21
Roy Oliver Kelly, Jr., MD	October 22
Lowell Francis Thornton, MD	October 22
Lillian Marie Hoke, MD	October 25
Irwin Hubert Brown, MD	October 27
Harold Houston Jones, Jr., MD	October 27
Francis Ray First, Jr., MD	October 28
Robert W. Kahn, MD	October 30
Charles Hugh Wilson, MD	October 30
George Kellogg Stephens, MD	November 4
Weldon Keiller Haynie, MD	November 25
Samuel Richard Fryer, MD	November 30
William Thomas Snoddy, MD	December 3
Philip George Joseph, MD	December 20
Charles Patrick Kirkland, MD	December 24

### 1992

John Moore Campbell III, MD	January 24
Bruce Ratliff Hinson, MD	January 24
Louis Carroll Taylor, MD	February 3
Earl Russell Muntz, MD	February 4

## DEATHS

### Edward M. Farris, MD 1918 - 1992

OSMA Life Member Edward M. Farris, MD, died November 22, 1991. Retired since 1985, Dr Farris was a general surgeon. He was born and educated in Oklahoma City and earned his medical degree from the University of Oklahoma School of Medicine in 1941. His postgraduate work was begun in Baltimore and completed in Dallas. In addition to his practice, Dr Farris was a surgery instructor at his alma mater.

### Earl Russell Muntz, MD 1908 - 1992

Earl R. Muntz, MD, retired Ada obstetrician-gynecologist, died February 4, 1992. A native of Elgin, Ill, Dr Muntz was graduated from the University of Wisconsin Medical School, Madison, in 1932. During World War II he served for four years with the US Army. By the time of his discharge he had earned the rank of lieutenant colonel. An OSMA Life Member, Dr Muntz retired from practice in 1985.

### Lewis Carroll Taylor, MD 1913 - 1992

Lewis C. Taylor, MD, a Yukon native, died March 3, 1992, in Oklahoma City. Dr Taylor was graduated from the University of Oklahoma School of Medicine in 1938. During World War II he served more than five years with the US Army's 45th Division, attaining the rank of major. He established his anesthesiology practice in Oklahoma City in 1946. An OSMA Life Member, Dr Taylor was a fellow of the American College of Anesthesiologists and a diplomate of the American Board of Anesthesiology. J



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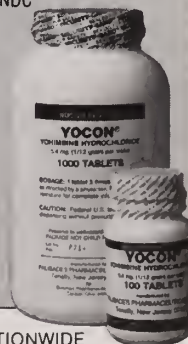
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#### References:

1. A. Morales et al., New England Journal of Medicine: 1221, November 12, 1981.
2. Goodman, Gilman — The Pharmacological basis of Therapeutics 6th ed., p. 176-188. McMillan December Rev. 1/85.
3. Weekly Urological Clinical letter, 27:2, July 4, 1983.
4. A. Morales et al., The Journal of Urology 128: 45-47, 1982.

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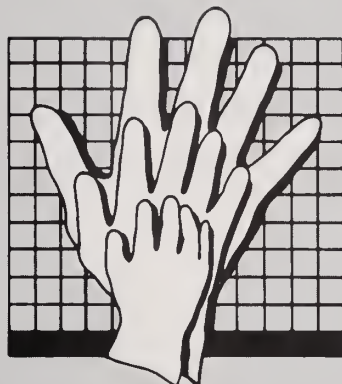
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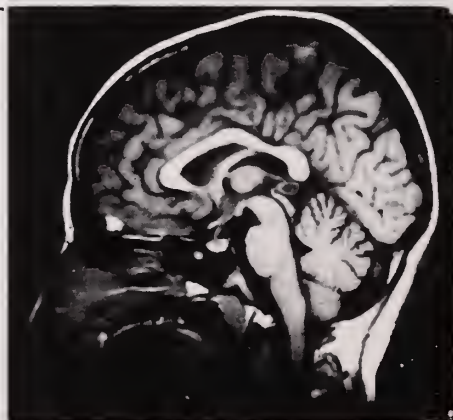


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### Style

All manuscripts should adhere to the style adopted by the American Medical Association as illustrated in *JAMA* and detailed in the AMA's *Manual of Style*. An abstract of 150 words or less should accompany each paper and should state (1) the exact question considered, (2) the key points of methodology and success of execution, (3) the key findings, and (4) the conclusion(s) directly supported by these findings. Footnotes, bibliographies, and legends for illustrations should be typewritten, double-spaced, on separate sheets. References are to be listed in the order of their appearance in the article.

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### News

Readers are encouraged to submit news items of interest to Oklahoma physicians. Where dates of meetings, etc., are important, please remember that each issue closes on the first day of the *preceding* month and reaches subscribers in the latter half of the month of publication.

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## **Caring Enough to Make a Difference: OSMAA State Convention 1992**

The Oklahoma State Medical Association Auxiliary (OSMAA) will hold its state convention this year in concurrence with the OSMA. The 1992 convention site will be the Marriott Hotel, Northwest Expressway, in Oklahoma City. The dates are later than usual so mark your calendars for May 28, 29, and 30. The OSMA will conclude their meetings one day later.

A pre-convention board luncheon and meeting will open the auxiliary's schedule at noon on Thursday. Thursday afternoon will be free until a 5:30 PM reception honoring special guests from the American Medical Association Auxiliary (AMAA) and the Southern Medical Association Auxiliary (SMAA). Oklahoma's own Sherry Strebel, the current AMAA president, will be in attendance. Dinner will follow at Portobello's.

Friday morning begins with a special event. County presidents and presidents-elect will have a breakfast. A continental breakfast follows for the general membership.

The OSMAA House of Delegates Annual Meeting will convene at 9:30 AM with opening speeches from AMAA Health Projects Chair Barbara Tippins, and an SMAA officer. The election and installation of

state officers will be held as well as the appointment of the new nominating committee. Other agenda items include the budget presentation, voting on by-law changes, and annual reports from county auxiliaries and directors. A memorial service to commemorate recently deceased auxiliarians will conclude the meeting. Non-delegate auxiliary members are invited to attend as guests.

Friday evening, the University of Oklahoma Alumni will host a reception and dinner. Saturday evening, the OSMA will host a cocktail reception for their president, Billy Dale Dotter, MD, and their president-elect, James D. Funnell, MD. The Presidential Inaugural Banquet will follow with very special entertainment planned.

Auxiliarians conclude their meeting with a post-convention breakfast and board meeting Saturday morning.

*"Caring enough to make a difference"* is OSMAA President Susan Paddack's theme for 1991-92. Remember to care, and mark your calendar for May 28-30. Send in your registration soon! See you at convention.

—Nadine S. Nickeson  
OSMAA Convention Chair 1992



■ **The Oklahoma State Medical Association** (OSMA) is sponsor of this month's campaign to increase immunizations in children under two years of age. The campaign also encourages pregnant women to seek care in their first trimester of pregnancy. The public information effort is a part of the Healthy Futures Campaign of the Oklahoma State Department of Health.

■ **May 30, 1992, is the date for the University of Oklahoma Department of Ophthalmology Residents and Alumni Meeting in Oklahoma City.** The course, to be conducted at the Waterford Hotel, will allow practicing ophthalmologists to share their clinical insights and provide new observations and therapeutic approach to myriad problems encountered in their specialty. It will be structured to allow for a discussion following each presentation.

"Update '92: 31st Annual Ob/Gyn Spring Symposium" is scheduled for June 10-12, 1992, at the Marriott Hotel in Oklahoma City. The course will provide health care professionals with innovative management plans to access and manage a wide variety of clinical problems in the practice of obstetrics and gynecology.

Additional information and registration materials for these two courses may be obtained by Magdalen De Bault, Associate Director, Continuing Medical Education, University of Oklahoma College of Medicine, PO Box 26901, 3SP511, Oklahoma City, OK 73190.

■ **The American Medical Association offers a service for physicians looking for short-term positions and for practices recruiting temporary replacements.** AMA's Locum Tenens Service provides recruiters and physicians with the widest possible exposure through listing locum tenens position in AMA's *Opportunity Placement Register* and through presenting abbreviated curricula vitae of physicians in AMA's *Physician Placement Register*. Complete physician curricula vitae can be ordered through the Service by practices seeking locum tenens physicians. Physicians can also request profiles of practices offering locum tenens positions. For more information about the AMA's Locum Tenens Service, please contact the AMA's Physicians Career Resource, American Medical Association, PO Box 10012, Chicago, IL 60610, or call 1-800-955-3565.

■ **The OSMA Council on Professional and Public Relations** is running a series of "infomercials" on the Oklahoma News Network and radio stations KTOK in Oklahoma City and KRMG in Tulsa. The series of spots containing medical and socioeconomic information for the public will continue through the end of May.

■ **Casper H. Smith, MD, Duncan, was awarded** Life Membership status at the November 24, 1991, meeting of the OSMA Board of Trustees. Dr Smith's name was inadvertently omitted from the board report that appeared in the January 1992 JOURNAL.

■ **OASIS—Oklahoma Areawide Services Information System**—an information and referral service for children with special needs and a central directory of resources for SoonerStart Early Intervention Program, is expanding. The expansion will add information for women and children with health care needs statewide. This expansion is in coordination with the Maternal and Child Health Division of the Oklahoma State Department of Health. Oklahomans can now call the OASIS toll-free number, 1-800-42-OASIS or 271-6302 in the Oklahoma City area, to find out about available health services statewide for women, infants, children, and adolescents, such as family planning, prenatal care, immunizations, WIC, and routine health check-ups. Trained information specialists can assist callers in locating such services, Monday through Friday, 8:30 AM to 4:30 PM.

■ **Authors submitting manuscripts to the JOURNAL** are being asked to submit, if possible, a computer floppy disk along with the required copies of the typed or printed manuscript. Such disks should be IBM compatible and, ideally, in WordPerfect format. Authors who do not have access to a WordPerfect program are asked to use an ASCII or text only format. Both 3.5" and 5.25" disks are acceptable; they should be labeled clearly with the name of the manuscript, the author's name, and the program or format used. Questions about the disks may be directed to Managing Editor Susan Records, 405-843-9571 or 1-800-522-9452.

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For the many faces of mild hypertension

\*The recommended starting dose for Calan SR is 180 mg once daily. Dose titration will be required in some patients to achieve blood pressure control. A lower initial starting dosage of 120 mg/day may be warranted in some patients (eg, the elderly, patients of small stature). Dosages above 240 mg daily should be administered in divided doses. Calan SR should be administered with food.

†Constipation, which is easily managed in most patients, is the most commonly reported side effect of Calan SR.

‡Verapamil should be administered cautiously to patients with impaired renal function.

### BRIEF SUMMARY

**Contraindications:** Severe LV dysfunction (see *Warnings*), hypotension (systolic pressure < 90 mm Hg) or cardiogenic shock, sick sinus syndrome (if no pacemaker is present), 2nd- or 3rd-degree AV block (if no pacemaker is present), atrial flutter/fibrillation with an accessory bypass tract (eg, WPW or LGL syndromes), hypersensitivity to verapamil.

**Warnings:** Verapamil should be avoided in patients with severe LV dysfunction (eg, ejection fraction < 30%) or moderate to severe symptoms of cardiac failure and in patients with any degree of ventricular dysfunction if they are receiving a beta-blocker. Control milder heart failure with optimum digitalization and/or diuretics before Calan SR is used. Verapamil may occasionally produce hypotension. Elevations of liver enzymes have been reported. Several cases have been demonstrated to be produced by verapamil. Periodic monitoring of liver function in patients on verapamil is prudent. Some patients with paroxysmal and/or chronic atrial flutter/fibrillation and an accessory AV pathway (eg, WPW or LGL syndromes) have developed an increased antegrade conduction across the accessory pathway bypassing the AV node, producing a very rapid ventricular response or ventricular fibrillation after receiving I.V. verapamil (or digitalis). Because of this risk, oral verapamil is contraindicated in such patients. AV block may occur (2nd- and 3rd-degree, 0.8%). Development of marked 1st-degree block or progression to 2nd- or 3rd-degree block requires reduction in dosage or, rarely, discontinuation and institution of appropriate therapy. Sinus bradycardia, 2nd-degree AV block, sinus arrest, pulmonary edema and/or severe hypotension were seen in some critically ill patients with hypertrophic cardiomyopathy who were treated with verapamil.

**Precautions:** Verapamil should be given cautiously to patients with impaired hepatic function (in severe dysfunction use about 30% of the normal dose) or impaired renal function, and patients should be monitored for abnormal prolongation of the PR interval or other signs of overdosage. Verapamil may decrease neuromuscular transmission in patients with Duchenne's muscular dystrophy and may prolong recovery from the neuromuscular blocking agent vecuronium. It may be necessary to decrease verapamil dosage in patients with attenuated neuromuscular transmission. Combined therapy with beta-adrenergic blockers and verapamil may result in additive negative effects on heart rate, atrioventricular conduction and/or cardiac contractility; there have been reports of excessive bradycardia and AV block, including complete heart block. The risks of such combined therapy may outweigh the benefits. The combination should be used only with caution and close monitoring. Decreased metoprolol and propranolol clearance may occur when either drug is administered concomitantly with verapamil. A variable effect has been seen with combined use of atenolol. Chronic verapamil treatment can increase serum digoxin levels by 50% to 75% during the first week of therapy, which can result in digitalis toxicity. In patients with hepatic cirrhosis, verapamil may reduce total body clearance and extrarenal clearance of digitoxin. The digoxin dose should be reduced when verapamil is given, and the patient carefully

monitored. Verapamil will usually have an additive effect in patients receiving blood-pressure-lowering agents. Disopyramide should not be given within 48 hours before or 24 hours after verapamil administration. Concomitant use of flecainide and verapamil may have additive effects on myocardial contractility, AV conduction, and repolarization. Combined verapamil and quinidine therapy in patients with hypertrophic cardiomyopathy should be avoided, since significant hypotension may result. Concomitant use of lithium and verapamil may result in a lowering of serum lithium levels or increased sensitivity to lithium. Patients receiving both drugs must be monitored carefully. Verapamil may increase carbamazepine concentrations during combined use. Rifampin may reduce verapamil bioavailability. Phenobarbital may increase verapamil clearance. Verapamil may increase serum levels of cyclosporin. Verapamil may inhibit the clearance and increase the plasma levels of theophylline. Concomitant use of inhalation anesthetics and calcium antagonists needs careful titration to avoid excessive cardiovascular depression. Verapamil may potentiate the activity of neuromuscular blocking agents (curare-like and depolarizing); dosage reduction may be required. There was no evidence of a carcinogenic potential of verapamil administered to rats for 2 years. A study in rats did not suggest a tumorigenic potential, and verapamil was not mutagenic in the Ames test. Pregnancy Category C. There are no adequate and well-controlled studies in pregnant women. This drug should be used during pregnancy, labor, and delivery only if clearly needed. Verapamil is excreted in breast milk; therefore, nursing should be discontinued during verapamil use.

**Adverse Reactions:** Constipation (7.3%), dizziness (3.3%), nausea (2.7%), hypotension (2.5%), headache (2.2%), edema (1.9%), CHF, pulmonary edema (1.8%), fatigue (1.7%), dyspnea (1.4%), bradycardia: HR < 50/min (1.4%), AV block: total 1°, 2°, 3° (1.2%), 2° and 3° (0.8%), rash (1.2%), flushing (0.6%), elevated liver enzymes, reversible non-obstructive paralytic ileus. The following reactions, reported in 1.0% or less of patients, occurred under conditions where a causal relationship is uncertain: angina pectoris, atrioventricular dissociation, chest pain, claudication, myocardial infarction, palpitations, purpura (vasculitis), syncope, diarrhea, dry mouth, gastrointestinal distress, gingival hyperplasia, ecchymosis or bruising, cerebrovascular accident, confusion, equilibrium disorders, insomnia, muscle cramps, paresthesia, psychotic symptoms, shakiness, somnolence, arthralgia and rash, exanthema, hair loss, hyperkeratosis, macules, sweating, urticaria, Stevens-Johnson syndrome, erythema multiforme, blurred vision, gynecomastia, galactorrhea/hyperprolactinemia, increased urination, spotty menstruation, impotence.

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\* See DOSAGE AND ADMINISTRATION section of prescribing information.

† If, after an adequate trial of ACCUPRIL alone, based on your medical judgment as the prescribing physician, you determine that your patient requires the addition of a diuretic, Parke-Davis will refund to the patient his/her cost for the diuretic prescription less any amount reimbursed or paid for by an HMO, insurance company, or any other plan or program.

For more details, ask your Parke-Davis Representative or call 1-800-955-3077.

‡ In some patients, the antihypertensive effect may diminish toward the end of the once-daily dosing interval. In such patients, an increase in dosage or twice-daily administration may be warranted.

ACCUPRIL is available in 10, 20, and 40 mg tablets. Usual initial starting dosage is 10 mg once daily.

ACCUPRIL is contraindicated in patients who are hypersensitive to this product and in patients with a history of angioedema related to previous treatment with an ACE inhibitor.

Please see brief summary of prescribing information on following page.



## Accupril® (Quinapril Hydrochloride Tablets)

Before prescribing, please see full prescribing information. A brief summary follows.

### INDICATIONS AND USAGE

ACCUPRIL is indicated for the treatment of hypertension. It may be used alone or in combination with thiazide diuretics.

In using ACCUPRIL, consideration should be given to the fact that another angiotensin-converting enzyme (ACE) inhibitor, captopril, has caused agranulocytosis, particularly in patients with renal impairment or collagen vascular disease. Available data are insufficient to show that ACCUPRIL does not have a similar risk (see WARNINGS).

### CONTRAINDICATIONS

ACCUPRIL is contraindicated in patients who are hypersensitive to this product and in patients with a history of angioedema related to previous treatment with an ACE inhibitor.

### WARNINGS

**Angioedema:** Angioedema of the face, extremities, lips, tongue, glottis, and larynx has been reported in patients treated with ACE inhibitors and has been seen in 0.1% of patients receiving ACCUPRIL. Angioedema associated with laryngeal edema can be fatal. If laryngeal stridor or angioedema of the face, tongue, or glottis occurs, treatment with ACCUPRIL should be discontinued immediately, the patient treated in accordance with accepted medical care, and carefully observed until the swelling disappears. In instances where swelling is confined to the face and lips, the condition generally resolves without treatment; antihistamines may be useful in relieving symptoms.

Where there is involvement of the tongue, glottis, or larynx likely to cause airway obstruction, emergency therapy including, but not limited to, subcutaneous epinephrine solution 1:1000 (0.3 to 0.5 mL) should be promptly administered (see ADVERSE REACTIONS).

**Hypotension:** Symptomatic hypotension was rarely seen in uncomplicated hypertensive patients treated with ACCUPRIL but, as with other ACE inhibitors, it is a possible consequence of therapy in salt/volume depleted patients, such as those previously treated with diuretics or dietary salt restriction or who are on dialysis (see PRECAUTIONS, DRUG INTERACTIONS, and ADVERSE REACTIONS). In controlled studies, syncope was observed in 0.4% of patients (N = 3203); this incidence was similar to that observed for captopril (1%) and enalapril (0.8%).

In patients with concomitant congestive heart failure, with or without associated renal insufficiency, ACE inhibitor therapy may cause excessive hypotension, which may be associated with oliguria or azotemia and, rarely, with acute renal failure and death. In such patients, ACCUPRIL therapy should be started at the recommended dose under close medical supervision. These patients should be followed closely for the first 2 weeks of treatment and whenever the dosage of antihypertensive medication is increased (see DOSAGE AND ADMINISTRATION).

If symptomatic hypotension occurs, the patient should be placed in the supine position and, if necessary, normal saline may be administered intravenously. A transient hypotensive response is not a contraindication to further doses; however, lower doses of ACCUPRIL or reduced concomitant diuretic therapy should be considered.

**Neutropenia/Agranulocytosis:** Another ACE inhibitor, captopril, has been shown to cause agranulocytosis and bone marrow depression rarely in patients with uncomplicated hypertension, but more frequently in patients with renal impairment, especially if they also have a collagen vascular disease such as systemic lupus erythematosus or scleroderma. Agranulocytosis did occur during ACCUPRIL treatment in one patient with a history of neutropenia during previous captopril therapy. Available data from clinical trials of ACCUPRIL are insufficient to show that, in patients without prior reactions to other ACE inhibitors, ACCUPRIL does not cause agranulocytosis at similar rates. As with other ACE inhibitors, periodic monitoring of white blood cell counts in patients with collagen vascular disease and/or renal disease should be considered.

**Fetal/Neonatal morbidity and mortality:** ACE inhibitors, including ACCUPRIL, can cause fetal and neonatal morbidity and mortality when administered to pregnant women.

When ACE inhibitors have been used during the second and third trimesters of pregnancy, there have been reports of hypotension, renal failure, skull hypoplasia, and death. Oligohydramnios has also been reported, presumably resulting from decreased fetal renal function; oligohydramnios has been associated with fetal limb contractures, craniofacial deformities, hypoplastic lung development, and intrauterine growth retardation.

Prematurity and patent ductus arteriosus have been reported, although it is not clear whether these occurrences were due to the ACE-inhibitor exposure or to the mother's underlying disease. It is not known whether exposure limited to the first trimester can adversely affect fetal outcome.

A patient who becomes pregnant while taking ACE inhibitors, or who takes ACE inhibitors when already pregnant, should be apprised of the potential hazard to her fetus. If she continues to receive ACE inhibitors during the second or third trimester of pregnancy, frequent ultrasound examinations should be performed to look for oligohydramnios. When oligohydramnios is found, ACE inhibitors should generally be discontinued.

Infants with histories of in utero exposure to ACE inhibitors should be closely observed for hypotension, oliguria, and hyperkalemia. If oliguria occurs, attention should be directed toward support of blood pressure and renal perfusion. Hemodialysis and peritoneal dialysis have little effect on the elimination of quinapril and quinaprilat.

No fetotoxic or teratogenic effects were observed in rats at quinapril doses as high as 300 mg/kg/day (180 and 30 times the maximum daily human dose when based on mg/kg and mg/m<sup>2</sup>, respectively), despite maternal toxicity at 150 mg/kg/day. Tested later in gestation and during lactation, reduced offspring body weight was seen at ≥25 mg/kg/day, and changes in renal histology (juxtaglomerular cell hypertrophy, tubular/pelvic dilation, glomerulosclerosis) were observed both in dams and offspring treated with 150 mg/kg/day. Quinapril was not teratogenic in the rabbit, however, as noted with other ACE inhibitors, maternal toxicity and embryotoxicity were seen in some rabbits at quinapril doses as low as 0.5 mg/kg/day (one time the recommended human dose) and 1.0 mg/kg/day, respectively.

### PRECAUTIONS

#### General

**Impaired renal function:** As a consequence of inhibiting the renin-angiotensin-aldosterone system, changes in renal function may be anticipated in susceptible individuals. In patients with severe heart failure whose renal function may depend on the activity of the renin-angiotensin-aldosterone system, treatment with ACE inhibitors, including ACCUPRIL, may be associated with oliguria and/or progressive azotemia and rarely acute renal failure and/or death.

In clinical studies in hypertensive patients with unilateral or bilateral renal artery stenosis, increases in blood urea nitrogen and serum creatinine have been observed in some patients following ACE inhibitor therapy. These increases were almost always reversible upon discontinuation of the ACE inhibitor and/or diuretic therapy. In such patients, renal function should be monitored during the first few weeks of therapy.

Some hypertensive patients with no apparent preexisting renal vascular disease have developed increases in blood urea and serum creatinine, usually minor and transient, especially when ACCUPRIL has been given concomitantly with a diuretic. This is more likely to occur in patients with preexisting renal impairment. Dosage reduction and/or discontinuation of any diuretic and/or ACCUPRIL may be required.

**Evaluation of hypertensive patients should always include assessment of renal function (see DOSAGE AND ADMINISTRATION).**

**Hyperkalemia and potassium-sparing diuretics:** In clinical trials, hyperkalemia (serum potassium ≥5.8 mmol/L) occurred in approximately 2% of patients receiving ACCUPRIL. In most cases, elevated serum potassium levels were isolated values which resolved despite continued therapy. Less than 0.1% of patients discontinued therapy due to hyperkalemia. Risk factors for the development of hyperkalemia include renal insufficiency, diabetes mellitus, and the concomitant use of potassium-sparing diuretics, potassium supplements, and/or potassium-containing salt substitutes, which should be used cautiously, if at all, with ACCUPRIL (see PRECAUTIONS, Drug Interactions).

**Surgery/anesthesia:** In patients undergoing major surgery or during anesthesia with agents that produce hypotension, ACCUPRIL will block angiotensin II formation secondary to compensatory renin release. If hypotension occurs and is considered to be due to this mechanism, it can be corrected by volume expansion.

#### Information for Patients

**Angioedema:** Angioedema, including laryngeal edema, can occur with treatment with ACE inhibitors, especially following the first dose. Patients should be so advised and told to report immediately any signs or symptoms suggesting angioedema (swelling of face, extremities, eyes, lips, tongue, difficulty in swallowing or breathing) and to stop taking the drug until they have consulted with their physician (see WARNINGS).

**Symptomatic hypotension:** Patients should be cautioned that lightheadedness can occur, especially during the first few days of ACCUPRIL therapy, and that it should be reported to a physician. If actual syncope occurs, patients should be told to not take the drug until they have consulted with their physician (see WARNINGS).

All patients should be cautioned that inadequate fluid intake or excessive perspiration, diarrhea, or vomiting can lead to an excessive fall in blood pressure because of reduction in fluid volume, with the same consequences of lightheadedness and possible syncope.

Patients planning to undergo any surgery and/or anesthesia should be told to inform their physician that they are taking an ACE inhibitor.

**Hyperkalemia:** Patients should be told not to use potassium supplements or salt substitutes containing potassium without consulting their physician (see PRECAUTIONS).

## Accupril® (Quinapril Hydrochloride Tablets)

**Neutropenia:** Patients should be told to report promptly any indication of infection (eg, sore throat, fever) which could be a sign of neutropenia.

**NOTE:** As with many other drugs, certain advice to patients being treated with ACCUPRIL is warranted. This information is intended to aid in the safe and effective use of this medication. It is not a disclosure of all possible adverse or intended effects.

### Drug Interactions

**Concomitant diuretic therapy:** As with other ACE inhibitors, patients on diuretics, especially those on recently instituted diuretic therapy, may occasionally experience an excessive reduction of blood pressure after initiation of therapy with ACCUPRIL. The possibility of hypotensive effects with ACCUPRIL may be minimized by either discontinuing the diuretic or cautiously increasing salt intake prior to initiation of treatment with ACCUPRIL. If it is not possible to discontinue the diuretic, the starting dose of quinapril should be reduced (see DOSAGE AND ADMINISTRATION).

**Agents increasing serum potassium:** Quinapril can attenuate potassium loss caused by thiazide diuretics and increase serum potassium when used alone. If concomitant therapy of ACCUPRIL with potassium-sparing diuretics (eg, spironolactone, triamterene, or amiloride), potassium supplements, or potassium-containing salt substitutes is indicated, they should be used with caution along with appropriate monitoring of serum potassium (see PRECAUTIONS).

**Tetracycline and other drugs that interact with magnesium:** Simultaneous administration of tetracycline with ACCUPRIL reduced the absorption of tetracycline by approximately 28% to 37%, possibly due to the high magnesium content in ACCUPRIL tablets. This interaction should be considered if coprescribing ACCUPRIL and tetracycline or other drugs that interact with magnesium.

**Lithium:** Increased serum lithium levels and symptoms of lithium toxicity have been reported in patients receiving concomitant lithium and ACE inhibitor therapy. These drugs should be co-administered with caution, and frequent monitoring of serum lithium levels is recommended. If a diuretic is also used, it may increase the risk of lithium toxicity.

**Other agents:** Drug interaction studies of ACCUPRIL with other agents showed:

- Multiple dose therapy with propranolol or cimetidine has no effect on the pharmacokinetics of single doses of ACCUPRIL.
- The anticoagulant effect of a single dose of warfarin (measured by prothrombin time) was not significantly changed by quinapril administration twice-daily.
- ACCUPRIL treatment did not affect the pharmacokinetics of digoxin.
- No pharmacokinetic interaction was observed when single doses of ACCUPRIL and hydrochlorothiazide were administered concomitantly.

### Carcinogenesis, Mutagenesis, Impairment of Fertility

Quinapril hydrochloride was not carcinogenic in mice or rats when given in doses up to 75 or 100 mg/kg/day (50 to 60 times the maximum human daily dose, respectively, on a mg/kg basis and 3.8 to 10 times the maximum human daily dose when based on a mg/m<sup>2</sup> basis) for 104 weeks. Female rats given the highest dose level had an increased incidence of mesenteric lymph node hemangiomas and skin/subcutaneous lipomas. Neither quinapril nor quinaprilat were mutagenic in the Ames bacterial assay with or without metabolic activation. Quinapril was also negative in the following genetic toxicology studies: *in vitro* mammalian cell point mutation, sister chromatid exchange in cultured mammalian cells, micronucleus test with mice, *in vitro* chromosome aberration with V79 Chinese hamster lung cells, and *in vivo* cytogenetic study with rat bone marrow. There were no adverse effects on fertility or reproduction in rats at doses up to 100 mg/kg/day (60 and 10 times the maximum daily human dose when based on mg/kg and mg/m<sup>2</sup>, respectively).

### Pregnancy

**Pregnancy Category D:** See WARNINGS, Fetal/Neonatal morbidity and mortality.

### Nursing Mothers

It is not known if quinapril or its metabolites are secreted in human milk. Quinapril is secreted to a limited extent, however, in milk of lactating rats (5% or less of the plasma drug concentration was found in rat milk). Because many drugs are secreted in human milk, caution should be exercised when ACCUPRIL is given to a nursing mother.

### Geriatric Use

Elderly patients exhibited increased area under the plasma concentration time curve (AUC) and peak levels for quinapril compared to values observed in younger patients; this appeared to relate to decreased renal function rather than to age itself. In controlled and uncontrolled studies of ACCUPRIL where 918 (21%) patients were 65 years and older, no overall differences in effectiveness or safety were observed between older and younger patients. However, greater sensitivity of some older individual patients cannot be ruled out.

### Pediatric Use

The safety and effectiveness of ACCUPRIL in children have not been established.

### ADVERSE REACTIONS

ACCUPRIL has been evaluated for safety in 4960 subjects and patients. Of these, 3203 patients, including 655 elderly patients, participated in controlled clinical trials. ACCUPRIL has been evaluated for long-term safety in over 1400 patients treated for 1 year or more.

Adverse experiences were usually mild and transient.

Discontinuation of therapy because of adverse events was required in 4.7% of patients treated with ACCUPRIL in placebo-controlled hypertension trials.

Adverse experiences probably or possibly related to therapy or of unknown relationship to therapy occurring in 1% or more of the 1563 patients in placebo-controlled hypertension trials who were treated with ACCUPRIL are shown below.

Adverse Events in Placebo-Controlled Trials

	ACCUPRIL (N = 1563) Incidence (Discontinuation)	Placebo (N = 579) Incidence (Discontinuation)
Headache	5.6 (0.7)	10.9 (0.7)
Dizziness	3.9 (0.8)	2.6 (0.2)
Fatigue	2.6 (0.3)	1.0
Coughing	2.0 (0.5)	0.0
Nausea/Vomiting	1.4 (0.3)	1.9 (0.2)
Abdominal Pain	1.0 (0.2)	0.7

Clinical adverse experiences probably or possibly related, or of uncertain relationship to therapy, occurring in 0.5% to 1.0% (except as noted) of the patients treated with ACCUPRIL (with or without concomitant diuretic) in controlled or uncontrolled trials (N = 4397) and less frequent, clinically significant events seen in clinical trials or post-marketing experience (the rarer events are in italics) include (listed by body system):

**General:** back pain, malaise

**Cardiovascular:** palpitation, vasodilation, tachycardia, heart failure, hyperkalemia, myocardial infarction, cerebrovascular accident, hypertensive crisis, angina pectoris, orthostatic hypotension, cardiac rhythm disturbances

**Gastrointestinal:** dry mouth or throat, constipation, gastrointestinal hemorrhage, pancreatitis, abnormal liver function tests

**Nervous/Psychiatric:** somnolence, vertigo, syncope, nervousness, depression

**Integumentary:** increased sweating, pruritus, exfoliative dermatitis, photosensitivity reaction

**Urogenital:** acute renal failure

**Other:** amblyopia, pharyngitis, sinusitis, bronchitis, agranulocytosis, thrombocytopenia

**Angioedema:** angioedema has been reported in patients receiving ACCUPRIL (0.1%). Angioedema associated with laryngeal edema may be fatal. If angioedema of the face, extremities, lips, tongue, glottis, and/or larynx occurs, treatment with ACCUPRIL should be discontinued and appropriate therapy instituted immediately. (See WARNINGS.)

### Clinical Laboratory Test Findings

**Hematology:** (See WARNINGS)

**Hyperkalemia:** (See PRECAUTIONS)

**Creatinine and blood urea nitrogen:** Increases (>1.25 times the upper limit of normal) in serum creatinine and blood urea nitrogen were observed in 2% and 2%, respectively, of patients treated with ACCUPRIL alone. Increases are more likely to occur in patients receiving concomitant diuretic therapy than in those on ACCUPRIL alone. These increases often remit on continued therapy.

\* In some patients, the antihypertensive effect may diminish toward the end of the once-daily dosing interval. In such patients, an increase in dosage or twice-daily administration may be warranted.



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# JOURNAL

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**ABOUT THE COVER**

James D. Funnell, MD, Oklahoma City, becomes the 87th president of the OSMA this month. Story on page 243.

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2. *Maintenance therapy*—for healed duodenal ulcer patients at a dosage of 150 mg h.s. at bedtime. The consequences of therapy with Axid for longer than 1 year are not known.

3. *Gastroesophageal reflux disease (GERD)*—for up to 12 weeks of treatment of endoscopically diagnosed esophagitis, including erosive and ulcerative esophagitis, and associated heartburn at a dosage of 150 mg b.i.d.

**Contraindication:** Known hypersensitivity to the drug. Because cross sensitivity in this class of compounds has been observed, H<sub>2</sub>-receptor antagonists, including Axid, should not be administered to patients with a history of hypersensitivity to other H<sub>2</sub>-receptor antagonists.

**Precautions:** General—1. Symptomatic response to nizatidine therapy does not preclude the presence of gastric malignancy.

2. Dosage should be reduced in patients with moderate to severe renal insufficiency.

3. In patients with normal renal function and uncomplicated hepatic dysfunction, the disposition of nizatidine is similar to that in normal subjects.

**Laboratory Tests**—False-positive tests for urobilinogen with Multistix<sup>®</sup> may occur during therapy.

**Drug Interactions**—No interactions have been observed with theophylline, chloridazepoxide, lorazepam, lidocaine, phenytoin, and warfarin. Axid does not inhibit the cytochrome P-450 enzyme system; therefore, drug interactions mediated by inhibition of hepatic metabolism are not expected to occur. In patients given very high doses (3,900 mg) of aspirin daily, increased serum salicylate levels were seen when nizatidine, 150 mg b.i.d., was administered concurrently.

**Carcinogenesis, Mutagenesis, Impairment of Fertility**—A 2-year oral carcinogenicity study in rats with doses as high as 500 mg/kg/day (about 80 times the recommended daily therapeutic dose) showed no evidence of a carcinogenic effect. There was a dose-related increase in the density of enterochromaffin-like (ECL) cells in the gastric oxyntic mucosa. In a 2-year study in mice, there was no evidence of a carcinogenic effect in male mice, although hyperplastic nodules of the liver were increased in the high-dose males as compared with placebo. Female mice given the high dose of Axid (2,000 mg/kg/day, about 330 times the human dose) showed marginally statistically significant increases in hepatic carcinoma and hepatic nodular hyperplasia with no numerical increase seen in any of the other dose groups. The rate of hepatic carcinoma in the high-dose animals was within the historical control limits seen for the strain of mice used. The female mice were given a dose larger than the maximum tolerated dose, as indicated by excessive (30%) weight decrement as compared with concurrent controls and evidence of mild liver injury (transaminase elevations). The occurrence of a marginal finding at high dose only in animals given an excessive and somewhat hepatotoxic dose, with no evidence of a carcinogenic effect in rats, male mice, and female mice (given up to 360 mg/kg/day, about 60 times the human dose), and a negative mutagenicity battery are not considered evidence of a carcinogenic potential for Axid.

Axid was not mutagenic in a battery of tests performed to evaluate its potential genetic toxicity, including bacterial mutation tests, unscheduled DNA synthesis, sister chromatid exchange, mouse lymphoma assay, chromosome aberration tests, and a micronucleus test.

In a 2-generation, perinatal and postnatal fertility study in rats, doses of nizatidine up to 650 mg/kg/day produced no adverse effects on the reproductive performance of parental animals or their progeny.

**Pregnancy—Teratogenic Effects—Pregnancy Category C**—Oral reproduction studies in rats at doses up to 300 times the human dose and in Dutch Belted rabbits at doses up to 55 times the human dose revealed no evidence of impaired fertility or teratogenic effect; but, at a dose equivalent to 300 times the human dose, treated rabbits had abortions, decreased number of live fetuses, and depressed fetal weights. On intravenous administration to pregnant New Zealand White rabbits, nizatidine at 20 mg/kg produced cardiac enlargement, coarctation of the aortic arch, and cutaneous edema in 1 fetus, and at 50 mg/kg, it produced ventricular anomaly, distended abdomen, spinal bifida, hydrocephaly, and enlarged heart in 1 fetus. There are, however, no adequate and well-controlled studies in pregnant women. It is also not known whether nizatidine can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. Nizatidine should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

**Nursing Mothers**—Studies in lactating women have shown that 0.1% of an oral dose is secreted in human milk in proportion to plasma concentrations. Because of growth depression in pups reared by treated lactating rats, a decision should be made whether to discontinue nursing or the drug, taking into account the importance of the drug to the mother.

**Pediatric Use**—Safety and effectiveness in children have not been established.

**Use in Elderly Patients**—Healing rates in elderly patients were similar to those in younger age groups as were the rates of adverse events and laboratory test abnormalities. Age alone may not be an important factor in the disposition of nizatidine. Elderly patients may have reduced renal function.

**Adverse Reactions:** Worldwide, controlled clinical trials included over 6,000 patients given nizatidine in studies of varying durations. Placebo-controlled trials in the United States and Canada included over 2,600 patients given nizatidine and over 1,700 given placebo. Among the adverse events in these placebo-controlled trials, only anemia (0.2% vs 0%) and urticaria (0.5% vs 0.1%) were significantly more common in the nizatidine group. Of the adverse events that occurred at a frequency of 1% or more, there was no statistically significant difference between Axid and placebo in the incidence of any of these events (see package insert for complete information).

A variety of less common events were also reported; it was not possible to determine whether these were caused by nizatidine.

**Hepatic**—Hepatocellular injury (elevated liver enzyme tests or alkaline phosphatase) possibly or probably related to nizatidine occurred in some patients. In some cases, there was marked elevation (>500 IU/L) in SGOT or SGPT and, in a single instance, SGPT was >2,000 IU/L. The incidence of elevated liver enzymes overall and elevations of up to 3 times the upper limit of normal, however, did not significantly differ from that in placebo patients. All abnormalities were reversible after discontinuation of Axid. Since market introduction, hepatitis and jaundice have been reported. Rare cases of cholestatic or mixed hepatocellular and cholestatic injury with jaundice have been reported with reversal of the abnormalities after discontinuation of Axid.

**Cardiovascular**—In clinical pharmacology studies, short episodes of asymptomatic ventricular tachycardia occurred in 2 individuals administered Axid and in 3 untreated subjects.

**CNS**—Rare cases of reversible mental confusion have been reported.

**Endocrine**—Clinical pharmacology studies and controlled clinical trials showed no evidence of anti-androgenic activity due to nizatidine. Impotence and decreased libido were reported with similar frequency by patients on nizatidine and those on placebo. Gynecomastia has been reported rarely.

**Hematologic**—Anemia was reported significantly more frequently in nizatidine than in placebo-treated patients. Fatal thrombocytopenia was reported in a patient treated with nizatidine and another H<sub>2</sub>-receptor antagonist. This patient had previously experienced thrombocytopenia while taking other drugs. Rare cases of thrombocytopenic purpura have been reported.

**Integumental**—Urticaria was reported significantly more frequently in nizatidine- than in placebo-treated patients. Rash and exfoliative dermatitis were also reported.

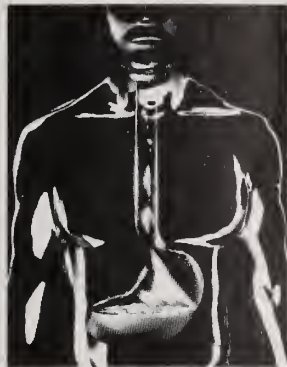
**Hypersensitivity**—As with other H<sub>2</sub>-receptor antagonists, rare cases of anaphylaxis following nizatidine administration have been reported. Rare episodes of hypersensitivity reactions (eg, bronchospasm, laryngeal edema, rash, and eosinophilia) have been reported.

**Other**—Hyperuricemia unassociated with gout or nephrolithiasis was reported. Eosinophilia, fever, and nausea related to nizatidine have been reported.

**Overdosage:** Overdoses of Axid have been reported rarely. If overdosage occurs, activated charcoal, emesis, or lavage should be considered along with clinical monitoring and supportive therapy. The ability of hemodialysis to remove nizatidine from the body has not been conclusively demonstrated, however, due to its large volume of distribution, nizatidine is not expected to be efficiently removed from the body by this method. PV 2093 AMP [101591]

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# YOCON<sup>®</sup> YOHIMBINE HCl

**Description:** Yohimbine is a 3a-15a-20B-17a-hydroxy Yohimbine-16a-carboxylic acid methyl ester. The alkaloid is found in Rubiaceae and related trees. Also in Rauwolfia Serpentina (L) Benth. Yohimbine is an indolalkylamine alkaloid with chemical similarity to reserpine. It is a crystalline powder, odorless. Each compressed tablet contains (1/12 gr.) 5.4 mg of Yohimbine Hydrochloride.

**Action:** Yohimbine blocks presynaptic alpha-2 adrenergic receptors. Its action on peripheral blood vessels resembles that of reserpine, though it is weaker and of short duration. Yohimbine's peripheral autonomic nervous system effect is to increase parasympathetic (cholinergic) and decrease sympathetic (adrenergic) activity. It is to be noted that in male sexual performance, erection is linked to cholinergic activity and to alpha-2 adrenergic blockade which may theoretically result in increased penile inflow, decreased penile outflow or both.

Yohimbine exerts a stimulating action on the mood and may increase anxiety. Such actions have not been adequately studied or related to dosage although they appear to require high doses of the drug. Yohimbine has a mild anti-diuretic action, probably via stimulation of hypothalamic centers and release of posterior pituitary hormone.

Reportedly, Yohimbine exerts no significant influence on cardiac stimulation and other effects mediated by B-adrenergic receptors, its effect on blood pressure, if any, would be to lower it; however no adequate studies are at hand to quantitate this effect in terms of Yohimbine dosage.

**Indications:** Yocon<sup>®</sup> is indicated as a sympatholytic and mydriatic. It may have activity as an aphrodisiac.

**Contraindications:** Renal diseases, and patient's sensitive to the drug. In view of the limited and inadequate information at hand, no precise tabulation can be offered of additional contraindications.

**Warning:** Generally, this drug is not proposed for use in females and certainly must not be used during pregnancy. Neither is this drug proposed for use in pediatric, geriatric or cardio-renal patients with gastric or duodenal ulcer history. Nor should it be used in conjunction with mood-modifying drugs such as antidepressants, or in psychiatric patients in general.

**Adverse Reactions:** Yohimbine readily penetrates the CNS and produces a complex pattern of responses in lower doses than required to produce peripheral alpha-adrenergic blockade. These include, anti-diuresis, a general picture of central excitation including elevation of blood pressure and heart rate, increased motor activity, irritability and tremor. Sweating, nausea and vomiting are common after parenteral administration of the drug.<sup>1,2</sup> Also dizziness, headache, skin flushing reported when used orally.<sup>1,3</sup>

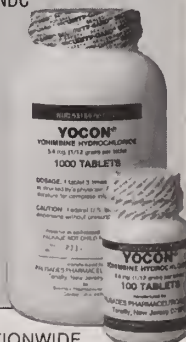
**Dosage and Administration:** Experimental dosage reported in treatment of erectile impotence.<sup>1,3,4</sup> 1 tablet (5.4 mg) 3 times a day, to adult males taken orally. Occasional side effects reported with this dosage are nausea, dizziness or nervousness. In the event of side effects dosage to be reduced to 1/2 tablet 3 times a day, followed by gradual increases to 1 tablet 3 times a day. Reported therapy not more than 10 weeks.<sup>3</sup>

**How Supplied:** Oral tablets of Yocon<sup>®</sup> 1/12 gr. 5.4 mg in bottles of 100's NDC 53159-001-01 and 1000's NDC 53159-001-10.

## References:

1. A. Morales et al., New England Journal of Medicine: 1221, November 12, 1981.
2. Goodman, Gilman — The Pharmacological basis of Therapeutics 6th ed., p. 176-188. McMillan December Rev. 1/85.
3. Weekly Urological Clinical letter, 27:2, July 4, 1983.
4. A. Morales et al., The Journal of Urology 128: 45-47, 1982.

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## Of Mice and Moonlight

American culture has many impudencies, including a tendency to an unabashed alteration of the English language. As a mother tongue, English has received scanty respect from the rowdy and rebellious immigrants who transplanted Shakespearian syntax to the American wilderness back in colonial times. The creative reconstruction of the hallowed hallmarks of English dialect is still proceeding at a beguiling pace. However, the classical English of Shakespeare and King James was a most eloquent and versatile idiom, with scads of loopholes for creative expression. Although the plural of *goose* is *geese*, the plural of *moose* is not *meece* but the identical word *moose*. While the plural of *mouse* is *mice*, the plural of *spouse* can never be *spice*. A *pod* of peas is tritely commonplace, but a *pod* of whales unfetters the imagination and lifts the spirit.

The American branch of the English language is quite creative in inventing expressive new word usages. Nouns, for example, are not uncommonly drafted into use as verbs, although there may result an uncomfortable uncertainty in the conjugation of the new verb. "To moonlight" is the presumptive infinitive form of a new expression meaning to work part-time at a second job. The phrase "I was moonlighting last night," or "a moonlighting resident" would be widely understood, but the past tense of this new verb is yet unclear. Should it be "I moonlit last night" or "I moonlighted last night"? These both seem

awkward or alien, and similar difficulties arise with "to baby sit" or "to weed eat." The sentences "I baby sat" and "I baby sitted" have both been heard in use, but the "correct" form is speculative. "To weed eat" will require careful conjugation to avoid verbal indigestion.

Regardless of the niceties of grammar rules, these American neologisms will be dynamically and creatively incorporated into our common American speech patterns. American English will become richer and more expressive from the admixture.

Regarding language, we note that the purpose of language is communication. The transfer of information and ideas from one human mind to another is the warp and woof of civilization and human progress. The JOURNAL of the Oklahoma State Medical Association monthly publishes scientific articles, unusual case reports, review articles, and provocative commentaries on most any subject of interest to physicians, and especially Oklahoma physicians.

The editors of the JOURNAL are eager to receive and to comment constructively on ideas and material for possible publications. The purpose of the JOURNAL is to provide a forum for Oklahoma physicians to publish medical articles.

*Ray V. M. Intyre, M.D.*



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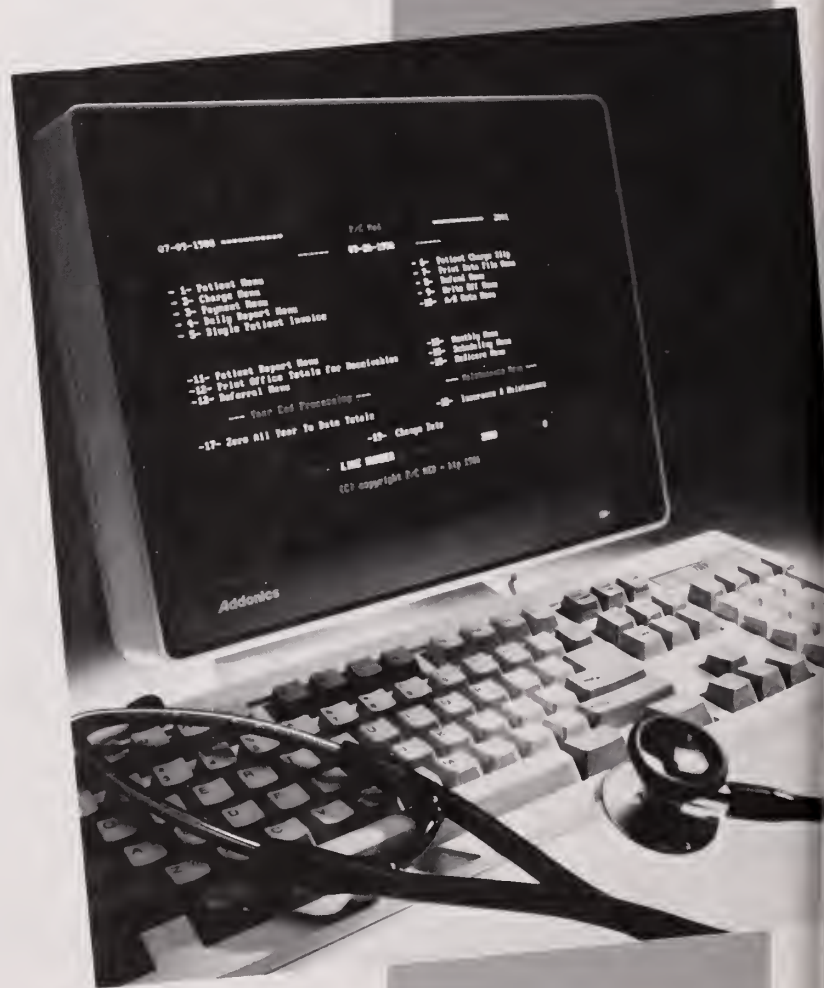
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## Big Shoes and Grave Responsibilities

Since territorial times and as each new president of the state medical association has been inaugurated, each, I am sure, has felt that his year has been a year of turmoil and problems. I am also certain that each of these presidents has felt that his year represented a truly critical times in the history of medicine. I can tell you as your new president that the year 1992 is no exception. American medicine, Oklahoma medicine, and medicine everywhere faces some of the greatest challenges that have ever been faced. Having traveled the width and breadth of this country attending American Medical Association meetings, I can assure you that the problems we face are universal and are present throughout the 50 states. American medicine is looking at difficult decisions concerning access to medical care, as well as the escalating costs to pay for that care. Individual physicians see the RBRVS as a threat to themselves, as well as to the ability of the patients to be seen and to receive the type of care they deserve. We, as physicians, are paying a tax imposed on us for supplying medical care to Medicare and Medicaid patients by receiving much less for these services than any of our paying patients are charged for the same care. A tax, yes, truly a tax — and a tax without representation.

Medicare also has created two types of physicians: those going into practice and those with established practices. It compensates these physicians by paying the younger physicians a decreased fee. The older



physicians see medicine as it used to be and recognize the loss of individual freedom, the physician/patient relationship, and the increasing consumerism which everyday becomes more prevalent. The younger physicians entering the field of medicine are increasingly hassled by reams of computer printouts, forms, and red tape, and with the decreased compensation, recognize the difficulty in paying their office overhead and expenses.

Yes, 1992 is recognized by your president as a most difficult year for physicians and their families. He also recognizes the big shoes that he must fill and is awed by the trust and confidence placed in him by fellow physicians. I beg, however, of all of us not to be lost in the bureaucracy of medicine, but rather let us become true patient advocates — yes, even flag-waving advocates — for our patients. Let us demand and insist that they get the excellence of care that is present in this country and that should be equally available to them. Medicine is an honored profession. It is, it has been, and it always will be. Let us bring forth the young physicians and stand up for their rights, as well as the rights of our patients, and insist on the persistence of the physician/patient relationship, the quality of care, and the wonderful feeling that comes to all of us for being part of the medical profession.

A handwritten signature in cursive script that reads "James F. Durnell M.D." The signature is written in dark ink and is positioned to the right of the main text block.



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# Huntington Disease: A Detective Story

Frederick V. Schaefer, PhD; Mary Floyd; Burhan Say, MD

As recombinant DNA diagnoses of various inherited diseases become a standard medical procedure, the practicing physician will be required to identify families at risk and counsel them (or refer them) appropriately. In many families the risk may not be immediately obvious or a reliable risk figure may appear to be unattainable. In the case presented, the patient had an apparent 50% risk for Huntington disease and all the immediate affected relatives were deceased. This relatively common scenario would generally prevent recombinant DNA diagnostic procedures from arriving at a more accurate risk estimate. Nevertheless, by recombinant DNA analysis, a risk for Huntington disease of less than 1% was obtained. Several key aspects of genetic analysis were required including extensive family histories, identification of informative markers, ordering the markers around the disease gene and appropriate statistical analyses. These discussions illustrate the power of recombinant DNA techniques to detect genetic disorders and demonstrate why they will be of increasing importance to the practicing physician.

**A**n anxious couple arrives in a physician's office with a dilemma common in late onset genetic diseases. The couple desperately wants to have children; however, the wife's father died of Huntington disease, and they are afraid of passing the disease to their children. Since Huntington disease is an autosomal dominant disease, the wife is at a 50% risk of developing Huntington disease and any children she might have are at a 25% risk. The physician

is aware that recombinant DNA technology, one of the most powerful new diagnostic tools in medicine, can target genes to identify and trace genetic diseases through families. However, these techniques usually require affected family members to be available for study.<sup>1</sup> In this family both of the wife's grandparents (grandmother affected) and her affected father are deceased. No genetic materials on the affected individuals were stored in a DNA bank. How should the physician counsel this couple? With no DNA from the affected family members, it would seem she could only be offered the standard risk of 50%.

In most cases this risk estimate would be the only information that could be offered to the family. However, further investigation into the wife's family reveals that there is one living member with Huntington disease — a second cousin. Can this distant relative be used to arrive at a more informative risk estimate? In this case he was. The family study described here illustrates how careful investigation of the pedigree may identify avenues that, however remote, can deliver an informative answer. The case also highlights the new challenges thrust upon a physician in today's society by advances in genetic technology.

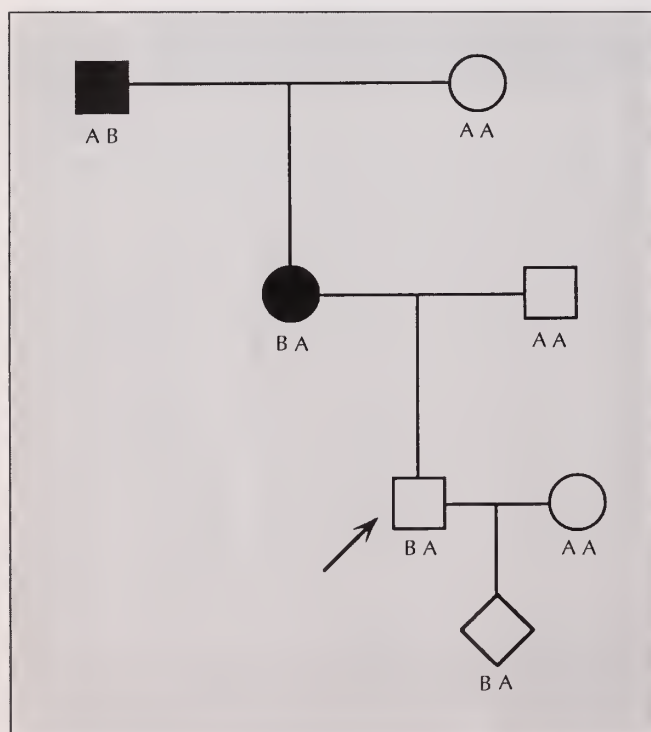
## Results

Tracing the Huntington disease gene through a family requires a detective's pattern of logic. In order to understand the approaches used in this particular family, it is necessary to remember how recombinant DNA technology can be used for the risk assessment in autosomal dominant diseases such as Huntington

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disease. Figure 1 illustrates the ideal pedigree for recombinant DNA "linkage testing" for any autosomal dominant disease. Linkage testing is required because neither the Huntington disease gene nor the defects in the gene have been identified. Therefore, the Huntington disease gene must be traced through families by virtue of its close association or "linkage" to specific markers with polymorphic alleles.<sup>1</sup> In Figure 1, marker allele B is associated with Huntington disease because this marker moves with the disease in each generation. Therefore, the patient's risk of inheriting Huntington disease in this pedigree is high. Note that the same results could be obtained by inference if the grandfather's DNA were unavailable but marker information could be obtained on the grandmother.

The actual risk depends on the closeness or the "linkage" of the marker to Huntington disease gene. Since the marker is not a direct assay of the defect that causes Huntington disease, there is a small possibility that during meiosis, recombination in the genetic material will separate a given marker from



**Figure 1.** An ideal family history to trace Huntington disease (or any autosomal dominant disease) through a family using "linked" markers. A and B are different markers specific for two alleles of a marker locus. The marker locus is very closely associated or "linked" to the Huntington disease gene and is very unlikely to be separated by recombination during meiosis.

the Huntington disease gene. Furthermore, there is one opportunity for recombination each generation. In this example, if the marker had a 5% recombination possibility, the risk of Huntington disease in this patient would be 95%. However, the risk in the fetus is 90% because the risk of recombination exists through two generations ( $2 \times 5\%$ ). In the case of Huntington disease, over 10 different markers are tested with recombination frequencies ranging from 1% to 6%.

The first essential component in analyzing this family was to clearly identify the markers associated with the Huntington disease gene. As can be seen in the pedigree (Fig 2), the second cousin was the only living affected individual in this family. However, his unaffected mother was available and, with informative markers, the allele associated with Huntington disease in the deceased father could be inferred. Furthermore, studies of the second cousin's unaffected uncle virtually eliminated the chance of recombination in his father's generation.

The clues essential for tracing Huntington disease though this family were found in two informative markers that were identified from a battery of 11 tests administered. The first, at D4S10 (chromosome 4, locus 10), was the locus that originally led to the discovery of Huntington disease on chromosome 4 in 1983 and is 4-5 recombination units from the Huntington disease gene.<sup>2</sup> The Huntington disease gene was associated with a 9 kb marker band but most importantly for the patient, she had inherited a different marker (14 kb) from her affected father, which suggests she is disease free. However, there were still 5 sites of potential recombination between the affected second cousin and the patient. This reduced the patient's risk for Huntington disease from 50% to 25% ( $5\% \times 5$ ; recombination risk  $\times$  chances for recombination). The second marker (D4S115) is closer to the Huntington disease gene, as indicated by a lower risk of recombination (3%). The Huntington disease gene in the second cousin was associated with the 2.3 kb marker, and the patient had inherited a 2.2 kb marker from her father. Therefore, the patient's risk of Huntington disease could be further lowered to 15% ( $3\% \times 5$ ; recombination risk  $\times$  chances for recombination).

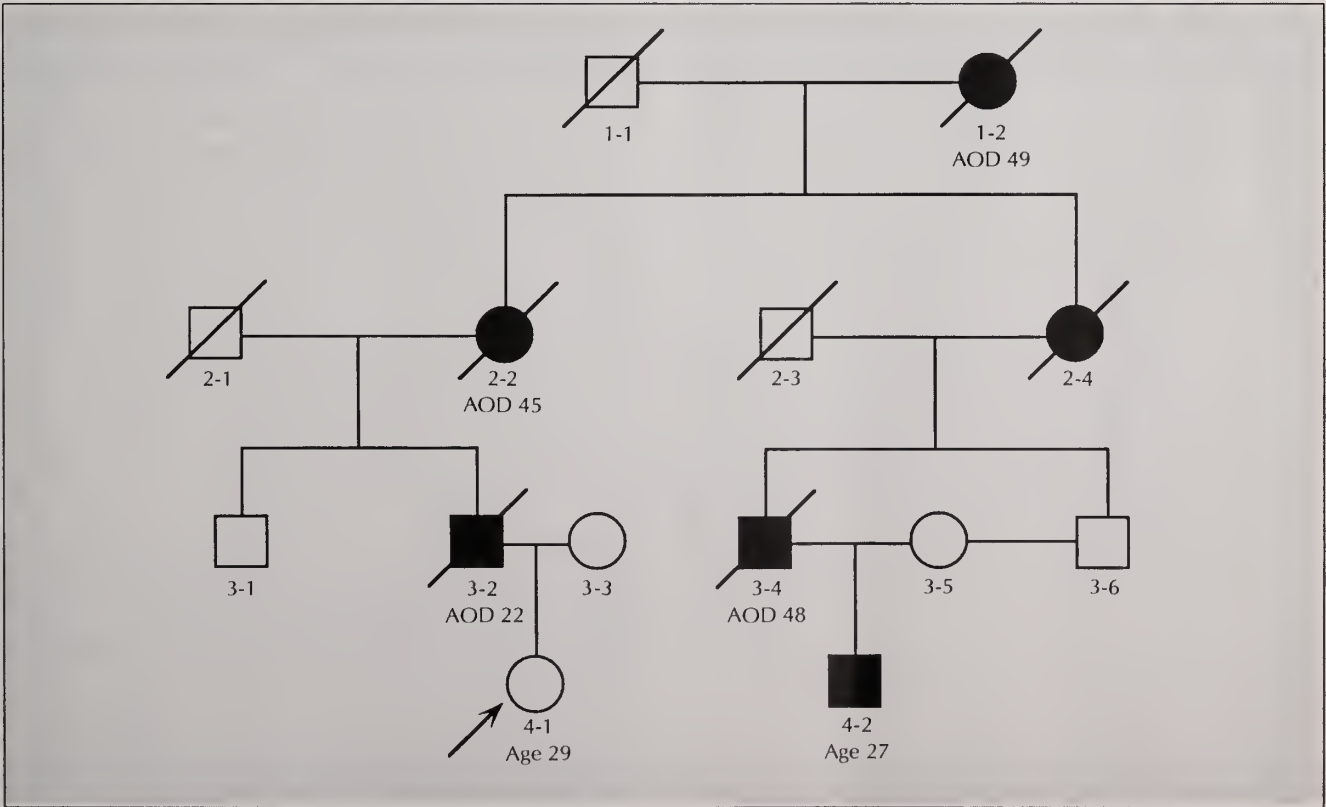
In the discussion above, only the individual recombination distances could be used in the risk estimate. However, recently published studies were able to further reduce the risk by clearly mapping these informative markers to the opposite sides of the Huntington disease gene.<sup>3</sup> This permitted a further interpretation of the marker data already obtained on

this family. Specifically, a very rare double recombination event would have to occur in order for recombination to invalidate the marker results. Therefore, standard statistical procedures allowed the risk of recombination per generation to be reduced to 0.15% ( $3\% \times 5\%$ ; multiplication of individual recombination risks), for a final risk of Huntington disease in the patient of only 0.75% ( $0.15\% \times 5$ ; revised recombination risk  $\times$  chances for recombination). Since she would have a 1 in 2 risk of passing the Huntington disease gene to her offspring, her risk of having a child with the disease is 0.325%.

One further test to improve the risk estimate was attempted using material obtained from the patient's father. Clearly, from the discussions above, if the number of chances of recombination could be reduced to one (father to patient), the patient would only have a 0.15% risk of Huntington disease. The FBI and other forensic agencies have begun to use materials obtained from deceased individuals for genetic information. However, special conditions for the preservation of the corpse are necessary, and only certain markers have been successfully used. Neither condi-

tion was met by the patient's father, who had been embalmed in the standard manner and buried 15 years earlier. However, the attempt was made using standard FBI protocols on embalmed liver, muscle, and bone tissue.<sup>4</sup> Unfortunately, the procedures did not yield usable DNA, and therefore, the patient's risk could not be reduced from 0.75%.

Despite the reduction of risk for Huntington disease from 50% to 0.75%, the patient still has a small, but finite, risk for Huntington disease. The principles of informed consent require that potential clients understand the strengths and limitations of the techniques prior to testing. Therefore, this family received extensive genetic counseling about the testing and also about the specific problems associated with her family. They were made aware that the testing might be inconclusive and, in the case of informative results, recombination probably would restrict results only to the accuracy range of 85% to 95%. In addition, pre- and post-testing psychological support mechanisms were established as is standard under generally accepted national and international protocols (Fig 3). Therefore, the patient was able to decide



**Figure 2.** Patient family history. The patient's (4-1) only living relative with Huntington disease was a second cousin (4-2). However, the linkage between the second cousins and the Huntington disease gene is clear by the pattern of affected individuals.

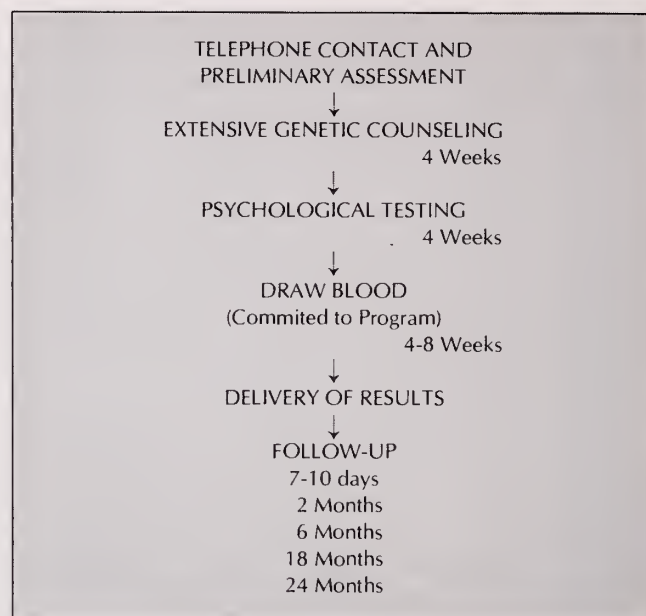


whether the expense and trouble of the testing were valuable to her and her family. In this case, it reduced the risk of Huntington disease sufficiently for the couple to try to have children of their own.

## Discussion

This case started with a very common scenario for a universally fatal late onset disease. The patient had numerous ancestors who had been stricken with Huntington disease, but almost all were deceased and unavailable for study. The initial family history, therefore, essentially precluded predictive testing for the patient. However, by further investigating the family history, a branch of the family was identified in which the markers could be linked with Huntington disease. Since the trail of the Huntington disease gene from the affected second cousin to the patient was clear, the pattern of markers could be inferred (limited by possibilities of recombination). Finally, by a fortunate placement of informative markers, the patient, after testing, was found to have only a small risk for Huntington disease. This case illustrates how recent advances in technology and an extensive family history can provide risk estimations previously unattainable.

The genetic potentials of DNA analysis demonstrated in this case have a much broader application. For example, DNA testing is routinely performed for the diagnoses of cystic fibrosis, Duchenne's and myotonic muscular dystrophy, sickle cell anemia, and polycystic kidney disease in our laboratories. Recombinant DNA testing for clinical diagnosis in many inherited disorders has become an established medical procedure requiring attending physicians to identify families at risk. However, the rapidly accelerating progress in DNA technology makes it very difficult for practicing physicians to remain current. Consequently, a careful family history by the attending physician to identify potential genetic problems and a referral to a geneticist for fuller analysis might be the best way to help such families and protect the practicing physician. The case also illustrates the value of DNA banking. If DNA had been available on any of the immediate affected relatives, the analysis would have been much more straight forward. In the final analysis, however,



**Figure 3.** Basic protocol for Huntington disease testing. This basic protocol is the model for all the laboratories doing Huntington disease testing. The complexity of the program is mandated by the possible threat of suicide; the psychological testing and support is designed to minimize this risk.

the DNA technology is providing patients with information that was impossible to obtain only 2 or 3 years ago, and this information permits these patients to make much more reasoned reproductive and life planning decisions. J

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# Annotated Guidelines on Gifts to Physicians from Industry

## American Medical Association Council on Ethical and Judicial Affairs

James S. Todd, MD; Kirk H. Johnson, JD

We have responded on an individual basis to many requests for interpretations of grey areas in the opinion on gifts from industry since its release in December 1990, and many physicians and companies asked for a detailed list of these interpretations. While the council agrees with the concerns several individuals have expressed about additional rules, it authorized this revised list of questions and answers which replaces the earlier draft. It also established three main principles for future implementation:

1. The key principles of the guidelines should be carefully observed by physicians, and the AMA will remain active in attempting to secure compliance by its members. The overriding rule is that individual physicians should not accept substantial gifts from industry, even if the gift has an educational or patient benefit. It is important that the profession set clear and enforceable standards in this regard.

2. Professional associations should make their own interpretations of the appropriateness of gifts to them from industry. Under appropriate conditions, associations of physicians may, of course, receive gifts from industry.

3. Neither the council nor its staff will attempt to regulate minor issues or minute details of compliance. For many situations there are no yes or no answers. Some

black letter rules are necessary so that conduct that should be changed is changed. In addition, they aid companies which want to comply with the spirit as well as the letter of the guidelines without putting themselves at a competitive disadvantage. The six points of the Opinion cover most situations and compliance to date has been good.

We will continue to be happy to answer questions from companies, physicians, or their associations.

On December 3, 1990, the Council on Ethical and Judicial Affairs issued its guidelines on gifts to physicians from industry. Since then, the Council has received numerous requests for interpretations of the guidelines. In order to facilitate application of the guidelines, the Council has developed the following annotated version that includes representative questions about the guidelines:

### General Questions:

#### a. When do the interpretations take effect?

The guidelines and interpretations are in full force. However, the interpretations do not apply retroactively to programs that have been planned in a good faith belief that they complied with the guidelines.

#### b. Do the guidelines apply only to pharmaceutical, device, and equipment manufacturers?

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"Industry" includes all "proprietary health-related entities that might create a conflict of interest," as recommended by the American Academy of Family Physicians.

**1** Any gifts accepted by physicians individually should primarily entail a benefit to patients and should not be of substantial value. Accordingly, textbooks, modest meals and other gifts are appropriate if they serve a genuine educational function. Cash payments should not be accepted.

**a. May physicians accept gram stain test kits, stethoscopes, or other diagnostic equipment?**

Diagnostic equipment primarily benefits the patient. Hence, such gifts are permissible as long as they are not of substantial value. In considering the value of the gift, the relevant measure is not the cost to the company of providing the gift. Rather, the relevant measure is the cost to the physician if the physician purchased the gift on the open market.

**b. May companies invite physicians to a dinner with a speaker and donate \$100 to a charity or medical school on behalf of the physician?**

There are positive aspects to the proposal. The donations would be used for a worthy cause, and the physicians would receive important information about patient care. There is a direct personal benefit to the physician as well, however. An organization that is important to the physician—and one that the physician might have ordinarily felt obligated to make a contribution to—receives financial support as a result of the physician's decision to attend the meeting. On balance, physicians should make their own judgment about these inducements. If the charity is predetermined without the physician's input, there would seem to be little problem with the arrangement.

**c. May contributions to a professional society's general fund be accepted from industry?**

The guidelines are designed to deal with gifts from industry which affect, or could appear to affect, the judgment of individual practicing physicians. In general, a professional society should make its own judgment about gifts from industry to the society itself.

**d. When companies invite physicians to a dinner with a speaker, what are the relevant guidelines?**

First, the dinner must be a modest meal. Second, the guideline does allow gifts that primarily benefit

patients and that are not of substantial value. Accordingly, textbooks and other gifts that primarily benefit patient care and that have a value to the physician in the general range of \$100 are permissible.

**e. May physicians accept vouchers that reimburse them for uncompensated care they have provided?**

No. Such a voucher would result directly in increased income for the physician.

**f. May physicians accumulate "points" by attending several educational or promotional meetings and then choose a gift from a catalogue of educational options?**

This guideline permits gifts only if they are not of substantial value. If accumulation of points would result in physicians receiving a substantial gift by combining insubstantial gifts over a relatively short period of time, it would be inappropriate.

**g. May physicians accept gift certificates for educational materials when attending promotional or educational events?**

The Council views gift certificates as a gray area which is not per se prohibited by the guidelines. Medical textbooks are explicitly approved as gifts under the guidelines. A gift certificate for education and materials, ie, for the selection by the physician from an exclusively medical textbook catalogue, would not seem to be materially different. The issue is whether the gift certificate gives the recipient such control as to make the certificate similar to cash. As with charitable donations, pre-selection by the sponsor removes any question. It is up to the individual physician to make the final judgment.

**2** Individual gifts of minimal value are permissible as long as the gifts are related to the physician's work (eg, pens and notepads).

**3** Subsidies to underwrite the costs of continuing medical education conferences or professional meetings can contribute to the improvement of patient care and therefore are permissible. Since the giving of a subsidy directly to a physician by a company's sales representative may create a relationship which could influence the use of the company's products, any subsidy should be accepted by the conference's sponsor who in turn can use the money to reduce the conference's registration fee. Payments to defray the costs of a conference should not be accepted directly from the company by the physicians attending the conference.



**a. Are conference subsidies from the educational division of a company covered by the guidelines?**

Yes. When the Council says "any subsidy," it would not matter whether the subsidy comes from the sales division, the educational division, or some other section of the company.

**b. May a company or its intermediary send physicians a check or voucher to offset the registration fee at a specific conference or a conference of the physician's choice?**

Physicians should not directly accept checks or certificates which would be used to offset registration fees. The gift of a reduced registration should be made across the board and through the accredited sponsor.

**4** Subsidies from industry should not be accepted directly or indirectly to pay for the costs of travel, lodging, or other personal expenses of physicians attending conferences or meetings, nor should subsidies be accepted to compensate for the physicians' time. Subsidies for hospitality should not be accepted outside of modest meals or social events held as a part of a conference or meeting. It is appropriate for faculty at conferences or meetings to accept reasonable honoraria and to accept reimbursement for reasonable travel, lodging, and meal expenses. It is also appropriate for consultants who provide genuine services to receive reasonable compensation and to accept reimbursement for reasonable travel, lodging, and meal expenses. Token consulting or advisory arrangements cannot be used to justify compensating physicians for their time or their travel, lodging, and other out-of-pocket expenses.

**a. If a company invites physicians to visit its facilities for a tour or to become educated about one of its products, may the company pay travel expenses and honoraria? This question has come up in the context of a rehabilitation facility that wants physicians to know of its existence so that they may refer their patients to the facility. It has also come up in the context of surgical device or equipment manufacturers who want physicians to become familiar with their products.**

In general, travel expenses should not be reimbursed, nor should honoraria be paid for the visiting physician's time since the presentations are analogous to a pharmaceutical company's educational or promotional meetings. The Council recognizes that medical devices, equipment, and other technologies may require, in some circumstances, special evalua-

tion or training in proper usage which can not practically be provided except on site. Medical specialties are in a better position to advise physicians regarding the appropriateness of reimbursement with regard to these trips. In cases where the company insists on such visits as a means of protection from liability for improper usage, physicians and their specialties should make the judgment. In no case would honoraria be appropriate and any travel expenses should be only those strictly necessary.

**b. If the company invites physicians to visit its facilities for review and comment on a product, to discuss their independent research projects, or to explore the potential for collaborative research, may the company pay travel expenses and an honorarium?**

If the physician is providing genuine services, reasonable compensation for time and travel expenses can be given. However, token advisory or consulting arrangements cannot be used to justify compensation.

**c. May a company hold a sweepstakes for physicians in which five entrants receive a trip to the Virgin Islands or airfare to the medical meeting of their choice?**

No. The use of a sweepstakes or raffle to deliver a gift does not affect the permissibility of the gift. Since the sweepstakes is not open to the public, the guidelines apply in full force.

**d. If a company convenes a group of physicians to recruit clinical investigators or convenes a group of clinical investigators for a meeting to discuss their results, may the company pay for their travel expenses?**

Expenses may be paid if the meetings serve a genuine research purpose. One guide to their propriety would be whether the National Institutes of Health (NIH) conducts similar meetings when it sponsors multicenter clinical trials. When travel subsidies are acceptable, the guidelines emphasize that they be used to pay only for "reasonable" expenses. The reasonableness of expenses would depend on a number of considerations. For example, meetings are likely to be problematic if overseas locations are used for exclusively domestic investigators. It would be inappropriate to pay for recreation or entertainment beyond the kind of modest hospitality described in this guideline.

**e. How can a physician tell whether there is a "genuine research purpose?"**

A number of factors can be considered. Signs that a genuine research purpose exists include the facts that there are (1) a valid study protocol, (2) recruit-

ment of physicians with appropriate qualifications or expertise, and (3) recruitment of an appropriate number of physicians in light of the number of study participants needed for statistical evaluation.

**f. May a company compensate physicians for their time and travel expenses when they participate in focus groups?**

Yes. As long as the focus groups serve a genuine and exclusive research purpose and are not used for promotional purposes, physicians may be compensated for time and travel expenses. The number of physicians used in a particular focus group or in multiple focus groups should be an appropriate size to accomplish the research purpose, but no larger.

**g. Do the restrictions on travel, lodging, and meals apply to educational programs run by medical schools, professional societies, or other accredited organizations which are funded by industry, or do they apply only to programs developed and run by industry?**

The restrictions apply to all conferences or meetings which are funded by industry. The Council drew no distinction on the basis of the organizer of the conference or meeting. The Council felt that the gift of travel expenses is too substantial even when the conference is run by a non-industry sponsor. (Industry includes all "proprietary health-related entities that might create a conflict of interest" as recommended by the American Academy of Family Physicians.)

**h. May company funds be used for travel expenses and honoraria of bona fide faculty at educational meetings?**

This guideline draws a distinction between attendees and faculty. As was stated, "[i]t is appropriate for faculty at conferences or meetings to accept reasonable honoraria and to accept reimbursement for reasonable travel, lodging, and meal expenses."

Companies need to be mindful of the guidelines of the Accreditation Council on Continuing Medical Education. According to those guidelines, "[f]unds from a commercial source should be in the form of an educational grant made payable to the CME sponsor for the support of programming."

**i. May travel expenses be reimbursed for physicians presenting a poster or a "free paper" at a scientific conference?**

Reimbursement may be accepted only by bona fide faculty. The presentation of a poster or a free paper does not by itself qualify a person as a member of the conference faculty for purposes of these guidelines.

**j. When a professional association schedules**

**a long-range planning meeting, is it appropriate for industry to subsidize the travel expenses of the meeting participants?**

The guidelines are designed to deal with gifts from industry which affect, or could appear to affect, the judgment of individual practicing physicians. In general, a professional society should make its own judgment about gifts from industry to the society itself.

**k. May continuing medical education conferences be held in the Bahamas, Europe, or South America?**

There are no restrictions on the location of conferences as long as the attendees are paying their own travel expenses.

**l. May travel expenses be accepted by physicians who are being trained as speakers or faculty for educational conferences and meetings?**

In general, no. If a physician is presenting as an independent expert at a CME event both the training and its reimbursement raise questions about independence. In addition, the training is a gift because the physician's role is generally more analogous to that of an attendee than a participant. Speaker training sessions can be distinguished from meetings (see 4b) with leading researchers, sponsored by a company, designed primarily for an exchange of information about important developments or treatments, including the sponsor's own research, for which reimbursement for travel may be appropriate.

**m. What kinds of social events during conferences and meetings may be subsidized by industry?**

Social events should satisfy three criteria. First, the value of the event to the physician should be modest. Second, the event should facilitate discussion among attendees and/or discussion between attendees and faculty. Third, the educational part of the conference should account for a substantial majority of the total time accounted for by the educational activities and social events together. Events that would be viewed (as in the succeeding question) as lavish or expensive should be avoided. But modest social activities that are not elaborate or unusual are permissible, eg, inexpensive boat rides, barbecues, entertainment that draws on the local performers. In general, any such events which are a part of the conference program should be open to all registrants.

**n. May a company rent an expensive entertainment complex for an evening during a medical conference and invite the physicians**



**attending the conference?**

No. The guidelines permit only modest hospitality.

**o. If physicians attending a conference engage in interactive exchange, may their travel expenses be paid by industry?**

No. Mere interactive exchange would not constitute genuine consulting services.

**p. If a company schedules a conference and provides meals for the attendees that fall within the guidelines, may the company also pay the costs of the meals for spouses?**

If a meal falls within the guidelines, then the physician's spouse may be included.

**q. May companies donate funds to sponsor a professional society's charity golf tournament?**

Yes. But it is sensible if physicians who play in the tournament make some contribution themselves to the event.

**r. If a company invites a group of consultants to a meeting and a consultant brings a spouse, may the company pay the costs of lodging or meals of the spouse? Does it matter if the meal is part of the program for the consultants?**

Since the costs of having a spouse share a hotel room or join a modest meal are nominal, it is permissible for the company to subsidize those costs. However, if the total subsidies become substantial, then they become unacceptable.

**5** Scholarship or other special funds to permit medical students, residents, and fellows to attend carefully selected educational conferences may be permissible as long as the selection of students, residents, or fellows who will receive the funds is made by the academic or training institution.

**a. When a company subsidizes the travel expenses of residents to an appropriately selected conference, may the residents receive the subsidy directly from the company?**

Funds for scholarships or other special funds should be given to the academic departments or the

accredited sponsor of the conference. The disbursement of funds can then be made by the departments or the conference sponsor.

**6** No gifts should be accepted if there are strings attached. For example, physicians should not accept gifts if they are given in relation to the physician's prescribing practices. In addition, when companies underwrite medical conferences or lectures other than their own, responsibility for and control over the selection of the content, faculty, educational methods, and materials should belong to the organizers of the conferences or lectures.

**a. May companies send their top prescribers, purchasers, or referrers on cruises?**

No. There can be no link between prescribing or referring patterns and gifts. In addition, travel expenses, including cruises, are not permissible.

**b. May the funding company itself develop the complete educational program that is sponsored by an accredited continuing medical education sponsor?**

No. The funding company may finance the development of the program through its grant to the sponsor, but the accredited sponsor must have responsibility and control over the content and faculty of conferences, meetings, or lectures. Neither the funding company nor an independent consulting firm should develop the complete educational program for approval by the accredited sponsor.

**c. How much input may a funding company have in the development of a conference, meeting, or lectures?**

The guidelines of the Accreditation Council on Continuing Medical Education on commercial support of continuing medical education address this question.

Any questions regarding the guidelines should be directed to the Council in care of Kirk B. Johnson, JD, General Counsel, American Medical Association, 515 North State Street, Chicago, Illinois 60610, FAX 321-464-5896. J



# The State of Adult Day Care in Oklahoma

Richard Green

**Adult daycare is a concept whose time has come, according to the author. And the facts seem to bear him out.**

**E**very weekday morning between 250 and 350 frail elderly Oklahomans are delivered to 15 adult day care centers located in seven state cities and towns.

The number of people varies because not everyone participates every day, but they all have impairments to some degree, including dementias and chronic illnesses.

At day's end, they are returned home, either by their families or through transportation arranged by the center. These elderly men and women are among a tiny, fortunate minority in an expanding elderly population that has been living longer but often not better.

Though every adult day care center is unique in tone, style, and range of services, they all share a common goal: to improve or maintain their clients' physical and mental functioning and enable them to live in their homes for as long as possible.

While they are getting the stimulation they need through structured, supervised activities, their family members are free to live their own lives. And since, in most cases, the elderly relative is happier and doing better in the day care center, the family knows they made the right decision.

But for every one of these fortunate few, many other elderly Oklahomans are placed inappropriately in nursing homes. Even more live at home in virtual social isolation, and their loneliness and sense of uselessness grease the skids of their deterioration.

Even if each center were operating at its capacity—and very few are—perhaps only a few hundred more persons could be accommodated, and only in Oklahoma City, Tulsa, Muskogee, Ada, Stillwater, Ponca City, and Okmulgee.

Yet, only a decade ago, Oklahoma had exactly one such center. Started in 1974, the Daily Living Center in Oklahoma City was the subject of an article in a 1981 University of Oklahoma College of Medicine alumni magazine that was mailed to every MD in the state. Since then, little if any publicity on adult day care has been targeted to physicians. Moreover, only a handful of physicians have been invited to visit an adult day care center. Center staff and advocates say inviting busy doctors is unrealistic.

Perhaps. But not trying to get the attention and support of physicians has been a serious omission and a major handicap to the adult day care movement in Oklahoma. Physicians could be recruited to serve as advisors, resources, and supporters of the development of their community's adult day care center. For example, probably no Oklahoma physician has done more for adult day care than Dr George Prothro of Tulsa. A former head of the Tulsa County Health Department and faculty member at the OU College of Medicine—Tulsa, Prothro for years has exposed every family medicine resident to Tulsa's Creative Care Center. "It is invariably a real eye-opener for them, and a referral option that they'll always keep in mind."

Physicians could and probably should be the greatest single source of referrals because they know their patients' needs and because Oklahoma centers require a physician's evaluation and orders before

accepting any participant. This professional linkage was legally cemented a few years ago as a state Department of Human Services (DHS) contractual proviso and affirmed last July when the state licensure regulations for adult day care went into effect.

That action by the state health department accentuates the timeliness of this article, for the adult day care industry nationally and in Oklahoma has been growing, irrevocably say its supporters. "All of us in the industry know how cost effective it is," says Bill Weaver, director of the Daily Living Center.

The evidence is mostly anecdotal, but the sheer number of grateful testimonials about the benefits from clients, families, and increasing numbers of health professionals is undeniable and compelling.

A Health Care Financing Administration (HCFA) senior staffer who has maintained (and read) a voluminous inventory of reports and papers on adult day care says that his opinion on day care's value had been equivocal. "Many of the reports seem favorable. But when you're talking about getting the federal government to start paying the bills. . . . Cost effectiveness has been argued about, but not demonstrated. Back in '88, a section of the Catastrophic Care Act mandated that we run some adult day care demonstration projects to test the feasibility of covering it as a Medicare benefit. But before we could get geared up, Congress repealed that act and the demonstration project ended."

Then, some months ago, his aged mother moved in with him and started attending a center. "The social contact she's had there on almost a daily basis halted her mental decline," he said. "If not for that, I think she would be in a nursing home by now."

Not surprisingly, his opinion on adult day care has changed; he's more supportive now. Seeing is believing.

\* \* \*

According to a recently completed national survey funded by HCFA, almost all adult day care centers provide social services and most provide at least two of three other services: nursing, personal care, and rehabilitative therapy. About 40% of the 1,700 respondents said they provided all four services. Another 29% said they provided three of the four. The project, including an eight-page survey, was developed and conducted by Dr Rick Zawadski, research professor of the University of California at San Francisco.

"This data belies the charge that day care centers are really just senior centers charging a fee," he said.

Confusion about senior centers and day care centers

usually involves social activities that are common to both, such as group singing, arts and crafts, and playing dominos.

"If you walk into a day care center, and see us singing or listening to a story, it might look like we're just passing time," says Bill Weaver of the Daily Living Center. "But these activities are all structured and designed to keep everybody physically and

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***All participants must have significant mental and/or physical impairments but not be bedfast.***

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mentally active. That's a key to maintaining their independence. So are the acts of getting out of bed and dressed to get here. There's a purpose to life."

Moreover, only day care centers include mandated physician interaction and individualized care plans, and screen every participant for placement. All participants must have significant mental and/or physical impairments but not be bedfast.

In Zawadski's survey, a little over half of the participants were reported to be confused to some degree, including those with Alzheimer's. About 42% of the people needed assistance with two or more of five daily living activities: feeding, bathing, toileting, grooming, and dressing. Perhaps most meaningful is the finding that 40% would be eligible for nursing home placement.

The idea that anyone would set up an adult day care center to make money is laughable to those with experience. "It usually takes about \$50,000 to \$60,000 to start and an enormous amount of hard work—60- to 80-hour workweeks—and dedication to make a go of it," says Suni Babb. She monitors the 12 Oklahoma centers with Department of Human Services' contracts for contract compliance and quality assurance. "In the last two years, I've heard from lots of people interested in starting an adult day care center. But when they learn about the start-up expense and read the contract, well, I usually don't hear from them again."

Most adult day care centers, she says, are grass roots efforts.

Ada's Pontotoc County Day Care Center started



three and a half years ago when a couple of local families didn't want to place their relatives in a nursing home, says Mel Robertson, the center's director. "They started a community-based effort that is still developing. We have weathered some critical financial problems but we're not out of the woods."

"We have about six clients a day, but we could handle double that. Our biggest problem is the strong sense in the community that a family has to take care of its own."

Dr Joanne Carpenter, an Ada family physician, agrees. "Not long ago, an elderly patient of mine who had been caring for her husband told me she could no longer leave him alone. I recommended that she take him to adult day care occasionally. She looked surprised and said, 'Oh, no, I could never do that.'"

While the Daily Living Center has the most experience in the state by far, that also means it has survived the most financial crises. Long-time board member Dr Vivian Smith spearheaded a burgeoning volunteer effort that survived the crises of the '70s and '80s. "On many occasions, it looked like we wouldn't meet our payroll, but somebody always came to our rescue (often as a result of an initiative taken by Vivian Smith, say her associates). United Way funding in 1980 kept us open. Two years ago, an increase in the DHS daily reimbursement rate from \$15 to \$25 helped us to nearly meet our daily costs of \$28 a day."

Muskogee's adult day care center was established in the winter of 1989 through the efforts of another remarkable woman, Brenda Mahoney. An RN who is low-key and unprepossessing, her accomplishments are impressive by any standard.

While a nursing student in Tulsa in 1983, she spent four hours at the Creative Care Center, Tulsa's first adult day care center. "The experience changed my life," Mahoney says.

To one whose only exposure to long-term care had been nursing homes, the Tulsa center was a revelation. "The philosophy and setting were just completely different," she said. "The client-staff ratio was much lower (at the day center) and their interaction was clearly wonderful. It was inspiring."

Mahoney had seen her future. After receiving her RN (she had been an LPN for several years), Mahoney and former classmate Edna Olsen tried to establish a day care center in Muskogee. But no one seemed interested. They incorporated anyway in 1989, feeling that adult day care made too much sense not to succeed.

When the doors of the non-profit Circle of Love

Elder Care Center opened in February 1990, only one person showed up. By April, when Mahoney signed a DHS contract, the daily census varied from none to three. "Brenda called in tears, wondering what she was doing wrong," remembers Suni Babb. "I told her it would just take time. But even I was surprised to learn six months later that Circle of Love had a waiting list of 63."

How had she done it? Networking and hustling. Eldercare in Muskogee and Wagoner counties had been especially helpful. And Muskogee family physician Phil Synar had been an early supporter and board member.

She also was securing a contract with the Green Country Mental Health Center to provide day care services for appropriate clients, including some chronically mentally ill.

But a lengthy waiting list signals both success and failure. The building, donated by the Optimist Club, could only accommodate 15 participants. The problem was alleviated when the owner of the Park Boulevard nursing home called Mahoney last spring to offer Circle of Love a relatively new building that would need a minimum of renovation.

Last summer, the daily census approached 40 and

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## *The future of adult day care in Oklahoma is tied to the extent of federal support.*

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Circle of Love expanded again by making a down payment on 20,000 square feet of buildings formerly owned by the Grace Cathedral. This past winter, the Park Boulevard building became an Alzheimer's unit; the newly acquired buildings house the rest of the participants. The combined census is expected to jump to 60 by this summer.

Moreover, Mahoney last year received a federal Rural Health Grant of \$207,000 to expand or develop services, including information and referral (she gets about six inquiries a day now), education and training, transportation, and to stabilize the Alzheimer's unit.

Word of her success spread rapidly throughout the region and state. Community representatives from Tahlequah, Wagoner, and Okmulgee asked Mahoney



to start and direct Circle of Love centers for them. Okmulgee's center signed a DHS contract last fall and Wagoner should be opening a center soon. Interest remains high in Tahlequah and representatives of McAlester and Miami also have approached Brenda Mahoney for help. Suni Babb also reports serious interest has been shown in Enid, Altus, Eufaula, Durant, Ardmore, and Norman.

\* \* \*

**W**hether these and other communities can succeed depends on several factors such as start-up funds, a corps of enthusiastic volunteers and supporters, public education efforts, and the participation of local physicians.

A few years ago, DHS briefly provided start-up grants; that's how Ada's center got started, says Mel Robertson. This year's budget of \$624,000 was funneled into DHS from a federal social services block grant, and mainly was devoted to reimbursing centers with performance-based contracts. The DHS Aging Services Division had asked for an additional \$1 million in state funds to provide start-up grants of approximately \$50,000 each.

But last winter with the announcement that DHS's budget deficit was nearly \$20 million, the dreams of starting new centers turned to the realities of survival. The legislative supplemental appropriation saved geriatric day care in Oklahoma for fiscal 1993. But before anyone could sigh with relief, it was announced that DHS's next budget deficit was expected to exceed \$100 million.

So, it may be timely to seek other sources of revenue. For example, HJR 1029 would permit a vote on a constitutional amendment to allow cities, towns, or counties to tax themselves up to three mills annually for elderly and handicapped services. This bill, sponsored by Rep. James D. Holt, R-Ponca City, hasn't advanced in the legislature the last two years, but next year may be different. Arkansas permits county options and as a result has a much larger and better system of services than Oklahoma.

Virtually everyone in the adult day care believes that the movement will continue to develop because it is meeting a major community need. Through his survey, Professor Zawadski identified about 3,000 adult day care centers nationally, compared to 2,100 in 1989.

Oklahoma is about to expand the industry by offering what apparently will be the nation's first

certified training program for adult day care staff. About 18 students will begin the one-year curriculum this August at Eastern Oklahoma County Vo-Tech in Choctaw. Bob Peak, the vo-tech's assistant superintendent for adult education, was in the Washington, DC, area last year and visited a few well-established day care centers. "When they heard about our curriculum, they said 'We'll hire all your graduates.'"

But while the need for adult day care is undeniable and growing, not every town has a Brenda Mahoney or a Vivian Smith who has the talent and dogged determination to translate good intentions into reality.

That is why the future of adult day care in Oklahoma and America is tied to the extent of federal support. Bill Weaver of the Daily Living Center believes that adult day care will be a Medicare-covered benefit within five years. Others say Congress is in no mood, given the budget deficit, to pay for such a costly benefit, even if studies were to demonstrate day care's cost effectiveness.

Zawadski, who conducted the recent national adult day care survey, says the biggest barrier to adult day care is adequate funding. "Adult day care is an option in the Medicaid program and now 32 states (but not Oklahoma) somehow funnel some Medicaid funds into adult day care."

However, Medicaid only covers about 20% of the population, he says. "So there's a lot of pressure on the federal government from consumers and providers to reform our long-term care system. It's really inconceivable to me that when that day comes, adult day care won't be an indispensable part." □

#### Oklahoma's Adult Day Care Centers

The Daily Living Center, Oklahoma City, (405) 949-1197.  
Lennie Marie Tolliver Alternative Care Center, Oklahoma City, (405) 424-5059.  
Homestead Center, Oklahoma City, (405) 632-0404.  
Tenth St. Better Living Center, Oklahoma City, (405) 424-3024.  
Creative Care Center, Tulsa, (918) 744-0161.  
St. Dunstan's Elder Day Care, Tulsa, (918) 496-3316.  
Center for Physically Limited, Tulsa, (918) 584-8607.  
Time-Out University Village, Tulsa, (918) 298-3372.  
Pontotoc County Adult Day Care, Ada, (405) 332-2855.  
Golden Villa Center, Ponca City, (405) 762-0264.  
The Life Center, Stillwater, (405) 377-0978.  
C.A.R.E. Association Adult Day Care, Shawnee, (405) 275-5420.  
Circle of Love Elder Care Center, Muskogee, (918) 687-6991.  
Circle of Love Elder Care Center, Okmulgee, (918) 756-3944.

#### The Author

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# Birth Weight-Specific Fetal Deaths and Neonatal Mortality and the Rising Cesarean Section Rate

Samuel Sepkowitz, MD

To address the question of what effect the rising cesarean section rate has on fetal and neonatal mortality, 33,843 births and 4,132 sections were studied at a community hospital (1968-1987). Crude fetal and neonatal mortality rates declined as the annual section rate rose from 4.7% to 25.7%. However, weight-specific mortality rates bore little relationship to weight-specific section rates. Neonatal mortality rates for infants weighing over 2499 g and without congenital anomalies remained essentially the same (.91, 1.0, 1.02 per 1000 live births) for each of the five-year periods included in the study, despite marked increases in section rates. Among fetal deaths in this weight group, only antepartum deaths declined in each period. This analysis of birth weight-specific mortality indicates that a five-fold rise in the annual cesarean section rate has contributed little, if anything, to reductions in fetal and neonatal mortality during this time.

During the past twenty years the neonatal mortality rate in the United States has declined to the lowest level ever recorded. Although there has been a recent flattening in the rate of decline, the provisional neonatal mortality rate in 1987 was 6.5 deaths per thousand live births,<sup>1</sup> compared to more than 15 deaths per thousand live births in 1968.<sup>2</sup>

At the same time births by abdominal surgery, the cesarean section, have reached the highest levels ever recorded. According to the consensus report of a National Institutes of Health task force organized to investigate this trend, the cesarean section rate in

1968 was 5% and had tripled by 1978. In that year the cesarean section was the tenth most common surgical procedure in the United States.<sup>3</sup> By 1984 the cesarean section was the most common surgical procedure in this country.<sup>4,5</sup> Provisionally, the rate for sections was 24.7% in 1988, when 967,000 births were delivered in this manner.<sup>6</sup>

Some have been tempted to assume the obvious, that these two historic trends are causally related. Looking over these trends in the mid-seventies, obstetrical leadership expressed satisfaction that a change in attitude which centered attention on fetal outcome rather than on the mother had lowered neonatal mortality by increasing the indications for cesarean section delivery. Interestingly, speculation at that time by obstetricians, including fifty medical school department chairmen, was in general agreement that section rates would level off between 10% and 15% of deliveries.<sup>7</sup>

However, O'Driscoll et al,<sup>8</sup> from the perspective of the largest obstetrical service in the British Isles, have found no correlation between the decrease in neonatal mortality and cesarean section rates. Their hospital has maintained a cesarean section rate below 5%. More recently O'Driscoll et al have stated, "The dilemma facing contemporary obstetrics is how to justify the massive increase in cesarean births when there is not convincing evidence of benefit to the child."<sup>9</sup>

These differences in obstetric management are extreme and extremely important to all concerned with newborn care. In the absence of randomized trials this study of trends is presented to pose the

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question: What is the contribution of cesarean section alone to the reduction of weight-specific fetal and neonatal mortality?<sup>10</sup> Weight alone as a marker for gestational age has been considered the overwhelming determinant of outcome.

## Methods

Deaconess Hospital is a community hospital that has served suburban Oklahoma City at the same location for over forty years. There are more than twenty-five obstetricians on the staff. Generally, all patients delivered were under the care of private physicians.

The primary sources of information for this study were the log books maintained on the obstetrical floor and the newborn records maintained in the nursery. These sources included information about live births, fetal deaths, neonatal deaths, birth weights, race, types of deliveries, presentations, gravidity, and twins. The indications for primary sections were also taken from the obstetrical log books. During 1968-1972 only information concerning live births, fetal deaths, neonatal deaths, and types of delivery were available. The term *dystocia* includes malpresentations, cephalopelvic disproportions, prolonged labor, and failure to progress. Fetal distress includes fetal monitor interpretations and evidence of meconium in the amniotic fluid. Only one indication for a primary section was listed. Where more than one existed, the one considered the most pressing indication was selected. Fetal distress was considered the most pressing indication. The indications for sections for 1987 are included separately as a greater effort was made that year to identify the indication (only one delivery had none). If an infant weighing more than 2499 g died, the chart was reviewed to ascertain the cause of death. Diagnoses for those infants who were transferred and subsequently died were based on information made available by other neonatal care units. Records of mothers who delivered stillbirths weighing more than 1499 g were also reviewed. This includes 46 charts with stillbirths weighing 1500-2499 g, and 75 charts with stillbirths weighing more than 2499 g.

Statistical comparisons were made by chi-square analysis with multiple-column contingency tables.

## Results

There were a total of 33,843 births during 1968-1987 and total of 4,132 cesarean sections. Figure 1 shows the annual rate of cesarean sections, primary sections, and sections of women who delivered infants weighing less than 2500 g. The cesarean section rates for the United States have been included for comparison.

For 1968-1972 there were 5,899 births and 378 cesarean sections (6.4%). During this time there were 56 neonatal deaths (9.5 per 1000 live births) and 45 fetal deaths (7.6 per 1000 births). From 1973 to 1987 the data have been grouped into five-year periods (Table 1).

There were 2,084 primary cesarean section deliveries of live births from 1973 to 1987. In Table 2 the indications for these sections are listed. The frequency distribution of indications for sections varied from year group to year group ( $P < 0.001$ ; chi-square = 153 with 16 df). The greatest difference from year

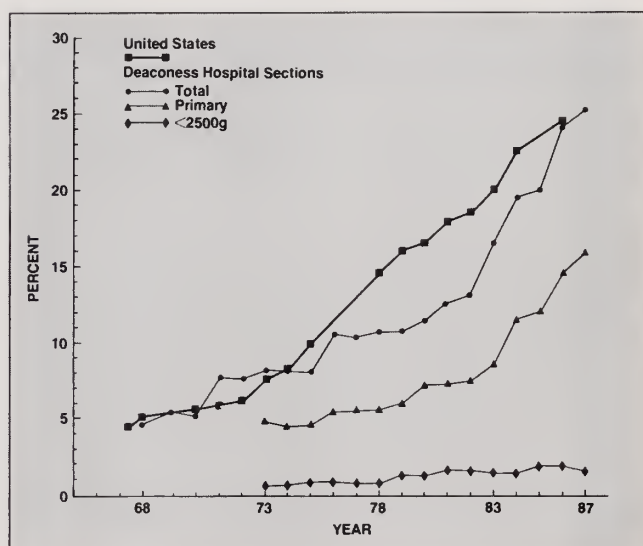


Figure 1. Annual rates of cesarean sections at Deaconess Hospital, Oklahoma City, 1968-1987, and rates for the United States, 1967-1986.<sup>3,11</sup>

Table 1. Summary of Obstetrical Factors  
No. (%)

	1973-1977	1978-1982	1983-1987
Total births	9949	10107	7888
Live births	9867	10030	7839
Stillborns	82	77	49
Primigravidas	4626 (46.5)	4487 (44.4)	3212 (40.7)*
Breech	416 (4.2)	410 (4.1)	328 (4.2)
Twin deliveries	83 (.83)	81 (.80)	65 (.82)
Cesarean section	898 (9.0)	1200 (11.9)	1656 (21.0)*
Primary section	490 (4.9)	682 (6.3)	962 (12.2)*
Sections <2500 g	77 (.77)	124 (1.2)	125 (1.6)*
Fetal monitor	473 (4.8)	6753 (66.8)	7375 (93.5)*
Race			
White	9604 (96.5)	9435 (93.4)	7296 (92.5)*
Black	345 (3.5)	672 (6.6)	592 (7.5)

\* $P < 0.001$



Table 2. Indications for Primary Cesarean Sections  
(%)

	Dystocia	Fetal Distress	Breech	Bleeding	Toxemia	Cord Prolapse	Herpes	Other	Not Stated	Total
1973 ↓ 1977	208 (42.4)	15 (3.1)	84 (17.1)	47 (9.6)	16 (3.3)	12 (2.4)	1 (.20)	22 (4.5)	85 (17.3)	490
1978 ↓ 1982	277 (40.6)	36 (5.3)	158 (23.2)	44 (6.4)	35 (5.1)	5 (0.7)	5 (0.7)	41 (6.0)	81 (11.9)	682
1983 ↓ 1987	348 (36.2)	158 (16.4)	176 (18.3)	42 (4.4)	46 (4.8)	14 (1.4)	36 (3.7)	45 (4.7)	97 (10.0)	962*
1987	112 (52.8)	34 (16.0)	28 (13.2)	11 (5.2)	9 (4.2)	3 (1.4)	5 (2.3)	9 (4.2)	1 (.47)	212

\* $P < 0.001$ ; Chi-square = 153.4 with 16 df

Table 3. Weight-Stratified Cesarean Section Rates — Livebirths  
Sections (%)  
Livebirths

	<1500 g	1500-2499 g	>2499 g
1973-1977	$\frac{7}{87}$ (8.0)	$\frac{63}{531}$ (11.9)	$\frac{814}{9249}$ (8.8)
1978-1982	$\frac{14}{72}$ (19.4)	$\frac{108}{527}$ (20.5)	$\frac{1073}{9431}$ (11.4)
1983-1987	$\frac{13}{46}$ (28.3)*	$\frac{112}{363}$ (30.9)†	$\frac{1529}{7430}$ (20.6)†

\* $P < 0.01$   
† $P < 0.001$

Table 4. Weight-Specific Neonatal Mortality  
Deaths (Rates Per 1000 Livebirths)  
Livebirths

	<1500 g	1500-2499 g	>2499 g	Total
1973-1977	$\frac{61}{87}$ (701.1)	$\frac{22}{531}$ (41.4)	$\frac{19}{9249}$ (2.00)	$\frac{102}{9867}$ (10.3)
1978-1982	$\frac{34}{72}$ (472.2)	$\frac{21}{527}$ (39.8)	$\frac{18}{9431}$ (1.9)	$\frac{73}{10030}$ (7.3)
1983-1987	$\frac{21}{46}$ (456.5)	$\frac{11}{363}$ (30.3)	$\frac{10}{7430}$ (1.3)	$\frac{42}{7839}$ (5.4)*

\* $P < 0.001$

group to year group was the frequency of cesarean sections due to fetal distress, which increased from 3.1% in 1978-1982 to 16.4% in 1983-1987.

All cesarean section deliveries of live births have been stratified into weight groups in Table 3. Chi-square analyses of the distribution of birth weights for all births in the three periods from 1973 to 1977 indicate that weight distribution is not independent of the year group ( $P < 0.001$ ; chi-square = 28.56 with 4 df). For infants born vaginally, birthweight is related significantly to the year of birth ( $P < 0.001$ ; chi-square = 43.18 with 4 df). However, for cesarean section delivery, birthweight is not significantly related ( $P = 0.141$ ; chi-square = 6.9 with 4 df).

As shown in Table 4, there was a steady reduction in crude neonatal mortality rates, the decrease being significant for the three periods ( $P < 0.05$ ). However, mortality rate reductions were not consistent nor significant for any weight group across time.

Neonatal mortality rates were greater for cesarean section deliveries than for vaginal deliveries in all three periods. In 1973-1977 neonatal mortality rates for sections were 13.6 per thousand live births versus ten per thousand for vaginal deliveries (not significant). However, in 1978-1983 the neonatal mortality associated with sections was over two times that associated with vaginal deliveries (15.1 per thousand versus 6.2 per thousand,  $P = 0.0007$ ; chi-square = 11.39). For 1983-1987 the neonatal mortality was 7.9 per thousand for cesarean sections and 4.7 per thousand for vaginal deliveries (not significant).

During 1973-1987 there were 26,100 live births

weighing more than 2499 g (94.1% of all live births). Table 5 lists the clinical diagnoses of deaths for the three time periods. There were 208 fetal deaths from 1973 to 1987 (Table 6). Among the 49 deaths weighing 1500-2499 g, there were 38 antepartum and eight intrapartum (21.0%) deaths; charts for three fetal deaths were missing. For the 75 fetal deaths weighing over 2499 g, 59 were antepartum and 16 intrapartum (21%). Overall, lethal congenital anomalies were found in 4 stillborns weighing over 1500 g. The use of ultrasonography to diagnose death was introduced during 1978-1982 and assisted in the diagnosis of 17 deaths over 1500 g; for 1983-1987 ultrasonography was used in the diagnosis of 14 deaths in this weight group.

## Discussion

Among those infants weighing more than 2499 g who comprise 94.1% of all live-birth infants in the study, there were 259 more cesarean sections in 1978-1982 than in the previous five-year period. This increase was associated and could have been responsible for one less death than in the previous period. For 1983-1987, there were additionally 456 more sections.

This associated increase could have been responsible for eight fewer deaths. However, the clinical diagnoses of the causes of neonatal deaths among infants weighing more than 2499 g suggests otherwise. The greatest reduction in neonatal deaths was among infants with congenital anomalies, declining from 10 deaths in 1973-1977 to two in 1983-1987 (Table 5). The remainder of deaths encompasses a spectrum of pathological disorders. Moreover, clustering of deaths that might be related to parturition was no more evident in 1973-1977, when the section rate was 8.8%

for this weight group, than in 1983-1987, when the section rate was 20.6%. A neonatal death rate of approximately one per 1000 live births, excluding congenital anomalies, in all three periods for infants weighing more than 2499 g is similar to the results reported by Neutra et al for infants born between 1969 and 1975.<sup>12</sup>

Among the live newborn infants weighing less than 1500 g, there also appears to be no correlation between mortality and increases in section rates. The singular population-based study by Malloy et al<sup>13</sup> on the effect of the rising section rate on mortality of very-low-birth weight infants found no improvement in mortality rates from increasing cesarean section rates. In addition, the authors warned that a failure to find improvement could, in fact, "reflect a harmful effect of cesarean section." That possibility exists in this study as well. Evidence suggests that increases in cesarean section rates may have had a deleterious effect on some infants. Although neonatal mortality among infants delivered by cesarean section was greater than infants delivered vaginally in all three periods, the neonatal mortality among the section deliveries was over two times that of vaginally delivered infants in 1978-1982 ( $P = 0.0007$ ).

Iatrogenic disease, primarily hyaline membrane disease or respiratory distress syndrome among prematures, has been extensively reported as resulting from the miscalculation of gestational age before cesarean sections, leading to an increase in mortality.<sup>14-17</sup> More recently, iatrogenic disease has been identified and reduced by better timing of delivery with the aid of ultrasonography, amniocentesis, and a change in attitude about the dangers of active labor in a previously sectioned woman, permitting the onset of labor to determine gestational age.<sup>18</sup> The effects of timing of delivery by cesarean section on outcome may have been as important a factor as the effect of numbers of sections on outcome in the present study, although it was not possible to investigate this factor.

Among fetal deaths the most striking finding was the reduction in antepartum deaths for those fetuses weighing over 1500 g. The reductions in fetal deaths are similar to those of Goldenberg et al<sup>19</sup> who reported that fetal deaths decreased 40% in the 2500-3999 g weight group and 71% in the >4000 g group in Alabama from 1974-1983. Intrapartum deaths made up 21% of fetal deaths. In Massachusetts for 1981, Lammer et al<sup>20</sup> found that only 14% of all fetal deaths occurred during labor and delivery and only 12% of all who were asphyxiated died during labor and delivery. Moreover, the advent of ultrasonography to deter-

**Table 5. Diagnoses of Neonatal Deaths for Infants Weighing >2499 g**

	1973-1977 <i>n</i> = 19	1978-1982 <i>n</i> = 18	1983-1987 <i>n</i> = 10
Respiratory disorders	4	4	2
Congenital anomalies	10	8	2
Infection	0	1	3
Neurological disorders	2	3	1
Hydrops fetalis	1	0	0
Sudden infant death	0	1	0
Multiple thrombosis	0	1	0
Accident	0	0	1
Unknown	2	0	1
Neonatal mortality rate*	2.05	1.91	1.35

\*Per 1000 live births

mine fetal viability has added another variable that complicates attempts to evaluate obstetrical interventions and intrapartum deaths with observational studies.<sup>21</sup>

The large population-based study of trends in cesarean section rates by Williams and Chen<sup>22</sup> is similar to the present study in one respect. No significant declines in either neonatal or fetal mortality for infants weighing more than 2000 g at birth were reported (approximately 97% of all births), although the cesarean section rate increased from 4.8% in 1960 to 15% in 1977. This lack of effect is all the more remarkable in that the increasing number of cesarean sections could of itself lower the mortality rates reported for cesarean births. In addition, repeat cesarean sections, with their lower mortality rates for newborns, accounted for much of the increase in the numbers of sections. Consequently, for the authors to suggest that the declines in perinatal mortality could be attributed to the increase in cesarean sections, by emphasizing that the perinatal mortality for infants weighing less than 2000 g (3% of births) was significantly lowered or that birthweight-specific fetal mortality for section deliveries was lower or equal to vaginal delivery, is reductionist and open to question.

Moreover, in an analysis of the California report, Shapiro<sup>23</sup> noted that neonatal mortality improved significantly only in infants weighing less than 1500

g and that neonatal mortality rates among infants weighing more than 2500 g were more in keeping with the New York City study, which found no decreases in neonatal mortality in infants of this weight. As stated by the Task Force on Cesarean Sections in 1980<sup>3</sup>: "In summary, the New York City experience indicates that a distinction needs to be made between low birth weight infants and those weighing over 2500 grams in assessing changes in mortality among cesarean births."

Fetal and neonatal deaths have been considered as the lethal component in the well-established theory that there is a *continuum of reproductive casualty*.<sup>24,25</sup> Death has been primarily related in the theory to events of pregnancy and parturition, with its attendant hazard of anoxia. The cesarean section rate has been increasing for more than 20 years to prevent that reputed anoxia. What began as the response to a valid explanation for the causes of fetal and neonatal death has ended as an obsessional fear of being responsible for an anoxic infant. Parturition may have been as hazardous as claimed for infants born between 1935 and 1947, but no longer. Good obstetric care reduced these risks associated with the problems of parturition at least 15 and possibly 20 years ago when the cesarean section rate was one fourth of what it is today.

Parturition is not the problem it has been made

Table 6. Birth Weight-Specific Fetal Deaths

	Deaths (Per 1000 Births)				
	Births				
	<1500 g	1500-2499 g	>2499 g	Unknown	Total
1973-1977	<u>25</u> (223) 112	<u>19</u> (34) 550	<u>34</u> (3.6) 9283	4	<u>82</u> (8.2) 9949
1978-1982	<u>27</u> (272) 99	<u>22</u> (40) 549	<u>28</u> (3.0) 9459	0	<u>77</u> (7.6) 10107
1983-1987	<u>25</u> (403) 62	<u>8</u> (24) 330	<u>13</u> (1.7) 7493	3	<u>49</u> (6.2) 7888
	Antepartum Deaths				
	Intrapartum Deaths				
1973-1977	—	<u>14</u> 5	<u>29</u> 5		
1978-1982	—	<u>17</u> 2*	<u>19</u> 9		
1983-1987	—	<u>7</u> 1	<u>11</u> 2		

\*3 charts missing



out to be. *Guidelines for Perinatal Care* — the word *perinatal*, introduced into the language in 1952, means “occurring in, concerned with, or being in the period around the time of birth”<sup>26</sup> — guidelines which have been issued jointly by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists, has continued to state that 25% to 30% of all pregnant women should be considered special high-risk patients whose pregnancies could result in a poor outcome.<sup>27,28</sup> This standard high-risk approach to care, ignoring birthweights in predicting outcomes, is difficult to reconcile with the finding that for liveborn infants weighing more than 2499 g (94.1% of all live births), exclusive of lethal congenital anomalies, the neonatal mortality rate was approximately one per 1000 at the beginning and end of this study.

Observational investigations such as this one can only go so far, no matter how laden with statistics. This data-based comparison over time poses questions concerning the rising cesarean section rate. To go beyond the limitations imposed by an observational investigation will necessitate prospective studies of cesarean section surgery. The clinical problem this study demonstrated is certainly great enough that prospective studies, with random allocations of cesarean sections versus conservative management, should not be ruled out as “too dangerous.” □

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#### The Author

Samuel Sepkowitz, MD, is a clinical professor of pediatrics at the University of Oklahoma Health Sciences Center and chief of pediatrics, Deaconess Hospital, Oklahoma City.



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*May 30 inauguration***James D. Funnell to assume OSMA presidency at Annual Meeting**

James D. Funnell, MD, Oklahoma City obstetrician-gynecologist, becomes the 87th president of the Oklahoma State Medical Association at the end of this month.

He will assume the office on May 30 during the Annual Meeting of the OSMA House of Delegates, to be held this year at the Marriott Hotel in Oklahoma City. He will succeed Dr Billy Dale Dotter, general practitioner from Okeene.



**Dr Funnell**

Born in Corydon, Iowa, Dr Funnell finished high school in San Diego, Calif, and was graduated from San Diego State College in 1952 with a Bachelor of Science degree in zoology. In 1954 he completed a BS in pharmacy at the University of California Medical Center, San Francisco, graduating with honors. At UC, he became a member of Rho Chi National Honor Society - Pharmacy in 1953.

Dr Funnell earned his medical degree from the University of Oklahoma College of Medicine, where he became a member of Alpha Omega Alpha National Honor Society - Medicine, in 1958. He was graduated in 1960, again with honors.

His 1960-61 internship at Wesley Hospital in Oklahoma City was followed by a residency at University of Oklahoma Medical Center Hospitals from 1961 to 1964.

Dr Funnell was board certified in obstetrics and gynecology in 1967, became a member of the American College of Obstetrics and Gynecology in 1969, and became a diplomate of the American College of Surgeons in 1973.

In the military, he was a captain in the United States Air Force and squadron commander in the Medical Service Corps.

Active in many professional associations, Dr Funnell holds memberships in the American Society of Abdominal Surgeons, American Fertility Society, Central Association of Obstetrics-Gynecology, Pan Pacific Surgical Association, Southern Medical Association, Oklahoma City OB-GYN Society, International Correspondence Society, Doctors Dinner Club, Osler Society, and Academy of Medicine.

Dr Funnell also has held a number of professional appointments. Among them are clinical professor, obstetrics-gynecology, University of Oklahoma Health Sciences Center, and former chief of OB-GYN and board member, Mercy Health Center, Oklahoma City. He is a past president and member of the Board of Directors, Oklahoma County Medical Society; past president of the Oklahoma County Clinical Society; and past secretary-treasurer and president-elect of the Oklahoma State Medical Association.

Active in his community as well, Dr Funnell is a past president, Board of Directors, McGuinness High School, and past president, Board of Directors, John Carroll School, both in Oklahoma City. He is a board member at St. Luke's Methodist Church, a representative of the Medical Division of Allied Arts, and a member of the American Cancer Society in Oklahoma County. He also works with the Boy Scouts of America, the Optimist Club of America, and the Oklahoma City Chamber of Commerce.

Dr Funnell and his wife, Loyce, have three sons: James D. Funnell, Jr.; William A. Funnell; and Richard E. Funnell. □

**Attend the 86th Annual Meeting of the OSMA House of Delegates  
Marriott Hotel, Oklahoma City  
May 29-31, 1992**



## JOURNAL and staff bring home varied production and writing awards

The OSMA JOURNAL has continued its winning ways this spring, garnering awards in several competitions.

In the national Sandoz Pharmaceuticals Medical Journalism competition, the JOURNAL earned a Special Award in the state medical journals category, trailing only First Prize winner *Pennsylvania Medicine*. Presentation of the cash award and certificate will be made by Sandoz Representative Carrie Gorman at the Annual Meeting of the OSMA House of Delegates this month.

In his comments, Sandoz judge Paul Fisher, retired University of Missouri professor of journalism, said the JOURNAL was "...the best performance in this category.... The immaculate covers promise what lies inside.... Everything it does, it does well.... The styling and consistency of the publication is simply beyond any criticism whatsoever. It's a clear winner."

This is the fourth Sandoz Award in six years for the JOURNAL, which won Honorable Mention in 1990,

a Special Award in 1989, and First Prize in 1987. The JOURNAL also earned Honorable Mention in 1983 and First Prize in 1978.

Locally, the JOURNAL has also had a banner year. In the 1992 Black Gold Awards competition, sponsored by the Central Oklahoma Chapter of the International Association of Business Communicators (IABC), Managing Editor Susan Records received the Award of Excellence for external publications. In the feature stories category, Richard Green, author of the JOURNAL's Leaders in Medicine series since 1985, won an Award of Merit for his story on Dr Elaine M. Davis [Sept 91].

Green's work in the Leaders in Medicine series earned accolades earlier this year from the Oklahoma Chapter of the Society of Professional Journalists. He was a double winner in the periodical feature writing category, winning first place with his June 1990 story on Dr Jess Herrmann and second place with his January 1991 biography of Dr Hays Yandell.

□

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## Have you done what CLIA requires? Registration due by September 1

The Clinical Laboratory Improvement Amendments of 1988 (CLIA-88) regulations were published in final form on February 28, 1992. The American Medical Association (AMA) believes that the final regulations have been significantly improved from those published in proposed form in May 1990. The AMA also believes the final regulations have been revised to more accurately reflect the actual testing environment. All laboratories, including lab tests performed in a physician's office, that test human specimens for the purpose of diagnosis and/or treatment are subject to the provisions of CLIA.

Most of the laboratory requirements in the regulations (quality assurance, proficiency testing, personnel requirements) will be gradually phased in after September 1, 1992. Despite the phased in implementation, there are steps that physicians can take now to assure that they are in compliance with the regulations. In November of 1991 HCFA distributed more than 625,000 survey forms entitled "Information to Implement the Clinical Laboratory Improve-

ment Amendments of 1988" (Form HCFA-109). Individuals receiving the form were to complete and return the form to HCFA by January 29, 1992. Physicians who did not complete the survey or who misplaced the survey should write the Health Care Financing Administration, Attn: CLIA Laboratory Inquiry, PO Box 26687, Baltimore, MD 21207-0487. There will be no financial penalty for physicians who complete and return the survey promptly.

HCFA is now reviewing the responses to that survey and this month will begin sending out bills to register each lab. Upon receipt of the CLIA registration fee, HCFA will provide a registration certificate. That certificate will remain in effect for two years or until the state surveying body has had an opportunity to inspect and license each lab. Physicians who do not complete the registration certificate by September 1 will have payment for Medicare lab services withheld. Physicians who do not have the registration certificate by January 1, 1993, will be subjected to civil monetary penalties. □

## OSHA releases final regs on protection from bloodborne pathogens

Final regulations to protect health care workers from bloodborne pathogens were released by the Occupational Safety and Health Administration (OSHA) several months ago and are becoming effective in stages.

All medical offices were to have completed exposure control plans by May 5. By June 5, they must conduct safety and protection training for employees with a potential for exposure. The last of the new regulations become effective July 5.

The Oklahoma State Medical Association offers a training program, teaching materials, and model exposure control plan to assist Oklahoma medical offices in meeting OSHA's requirements.

Also, the American Medical Association is producing a comprehensive training program entitled, "For Your Protection: The OSHA Regulations on Bloodborne Pathogens." The program includes a 25-minute videotape, administrator's guide, model exposure control plan, and training manuals. It is available to AMA members for \$150 and to non-AMA members for \$195. Additional information may be obtained from the AMA by calling 1-800-933-4AMT.

The OSHA regulations require training during normal work hours within 90 days of the effective

date of the regulations (June 5), and training initially upon assignment to a job with exposure potential, with retraining annually. Employees who have received appropriate training within the past year need only receive additional training in items not previously covered.

Medical offices that have not yet completed training requirements should contact the OSMA or AMA for information. □

## Seminar to focus on federal laws

The PLICO seminar to be held during the OSMA Annual Meeting this month will discuss new federal laws and regulations affecting the practice of medicine. The program, which will begin at 1:30 PM, Saturday, May 30, at the Marriott Hotel in Oklahoma City, will meet the PLICO requirement for attending a loss prevention seminar every three years. The Oklahoma City law firm of Short, Barnes, Wiggins, Margo, and Adler will conduct the program. Among the items to be discussed will be bloodborne pathogen regulations, the Living Will, and informed consent. Advance telephone registrations are encouraged. Call 405-843-9571 or 1-800-522-9452. □



## Centralized Credentialing

Tanya A. Luce, Associate Executive Director, TCMS

### What is centralized credentialing?

Centralized credentialing is a process by which one central agency provides verification of practitioners' credentials for health care facilities.

Centralized credentialing is a recommendation of the American Medical Association's Hospital Medical Staff Services Section Governing Council and recognized by the Joint Commission on Accreditation of Health Care Organizations (JCAHO) as an outside agency to collect information on behalf of a health care facility.

With this program a practitioner has to complete only one application form to request privileges with any number of health care facilities. The credentialing service will provide the application to the physician and then collect the required documentation for the health care facility.

An institution, as a provider of this credentialing information, will probably have to respond to only one inquiry, per physician, for every participating health care facility contracted with the service.

### Why centralized credentialing makes sense

In recent years, the great emphasis placed on providing quality patient care has increased the responsibility of health care providers in appointing qualified medical staff members. The practitioner appointment or credentialing process currently requires an exhaustive task of gathering and verifying all background data and reference information on a medical staff applicant in order to assure that privileges are granted only to qualified individuals.

Most physicians apply for membership to several health care facilities so that the credentialing process

is duplicated a number of times. Results of a recent survey estimated that a health care facility spends \$277 to process an application. average, each health care facility executes about 25 letters for each applicant during the appointment process. When you multiply that figure by three to five facilities, it is easy to see how a centralized service can save health care facilities both money and time.

A solution to this "paper chase" is a centralized credentialing collection service that offers a single source for the comprehensive, uniform, state-of-the-art verification and distribution of an applicant's background information.

Both the practitioner and the health care facility must authorize the verification process before the credentialing information is processed and distributed. A credentialing service exists only to verify and provide copies of the documentation it receives; health care facilities still maintain the decision making authority to grant or deny staff privileges.

All parties involved in a centralized credentialing service benefit: Health care facilities streamline improve their credentialing process while saving valuable time and money; practitioners benefit from the centralized approach, because one standard application is used for all facilities and the physician's office receives only one phone call or letter for information, rather than multiple requests. Reducing duplication of effort and expenses by the appointment process creates a win-win situation for both the practitioner and the health care facility:

1. A practitioner is furnished a list of the service's participating facilities with information on each facility's standards, application fees, and health care facility contacts, along with the service's application request form.

2. After the practitioner selects the facilities he or she wishes to apply to for medical staff membership,



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the service furnishes the health care facility with a copy of the application request form which includes details on the physician's qualifications and asks the facility if it will accept an application.

3. The facilities notify the service to proceed if the practitioner meets their initial standards for application.

4. The practitioner completes one standard application form that has been approved by the participating facility and specific privilege forms for each facility where the practitioner is seeking membership.

5. After the service receives the completed application, the information is entered into a computerized database. Using a centralized credentialing software program, verification letters are generated regarding the practitioner's licensure, education, training reference, and insurance information.

6. The requests are tracked in the computer system to provide the practitioner and facility with an update every 30 days (if necessary) during the data collection process.

7. After the verification information has been returned and processed, copies are forwarded to the

health care facility where the practitioner has applied for membership. (Each facility receives authenticated copies to fulfill JCAHO standards.) Each facility then begins its standard credentialing process of committee review before membership is granted.

### Legal implications

One of the most frequently asked questions about implementing a centralized credentialing service is, "What are the legal implications of sponsoring or participating in a centralized credentialing collection service?"

The JCAHO currently requires that "the granting of delineated clinical privileges is based on verified information regarding the applicant's licensure, specific training, experience, and current competence."

This requirement has been interpreted by the Joint Commission as permitting an outside agency (ie, medical society) to collect information on behalf of a health care facility, as long as the outside agency sends copies of the actual documents collected directly to the health care facility.

(continued)



"I have never gotten used to people dying. And I don't want to get used to it."

Dr. Aliza Lifshitz, Internist, Los Angeles, California,  
Member, American Medical Association

Patients come to physicians for many reasons. Beyond relief from pain, they seek compassion, empathy and support. AIDS patients receive all of these and more from Dr. Aliza Lifshitz.

Born and raised in Mexico and educated at one of Mexico City's finest medical schools, Dr. Lifshitz now serves the Hispanic community in Southern California. Over a third of her patients have tested HIV positive. Most live below the poverty level. Many are illegal aliens.

"I never forget what it means to be a doctor, and what it means is embodied in the Principles of Medical Ethics of the American Medical Association (AMA)," states Dr. Lifshitz.

You are invited to join Dr. Lifshitz and to join with her in her efforts to bring quality health care to those in need. Become a member of the AMA today.

Members of the AMA are encouraged to join their state, county and specialty societies

**American Medical Association**

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## IN MEMORIAM

### 1991

Alfred Burke Hinkle, MD	April 2
Hassell Eugene Groves, MD	April 3
Joe Marion Parker, MD	April 3
Henry Clinton Smith, MD	April 4
George Louis Kaiser, MD	April 10
Robert Phillip Messinger, MD	April 10
John Norman Penrod, MD	April 19
John Florence, MD	April 20
Clifford Alton Brown, MD	April 29
James Goree Moore, MD	April 29
Mark Duane Hopping, MD	May 1
William Alfred Cunningham, MD	May 13
Gilbert Wayne Tracy, MD	May 13
George Clifford Moore, MD	May 24
Daisy Gertrude Cotten, MD	May 26
Edward Woodrow Ellis, MD	May 28
Ronald I. Cramer, MD	June 16
Edward Tiffin Cooke, Jr., MD	June 18
Arvin Craig Roberson, MD	July 15
John Berry Gilbert, MD	August 6
Frank Leo Bradley, MD	August 31
Rugie Reginald Coates, MD	September 15
James Byron Snow, MD	September 28
Howard Angus, MD	October 9
Jack Owen Alexander, MD	October 21
Roy Oliver Kelly, Jr., MD	October 22
Lowell Francis Thornton, MD	October 22
Lillian Marie Hoke, MD	October 25
Irwin Hubert Brown, MD	October 27
Harold Houston Jones, Jr., MD	October 27
Francis Ray First, Jr., MD	October 27
Robert W. Kahn, MD	October 30
Charles Hugh Wilson, MD	October 30
George Kellogg Stephens, MD	November 4
Edward M. Farris, MD	November 22
Weldon Keillor Haynie, MD	November 25
Samual Richard Fryer, MD	November 30
William Thomas Snoddy, MD	December 3
Philip George Joseph, MD	December 20
Charles Patrick Kirkland, MD	December 24

### 1992

John Moore Campbell III, MD	January 24
Bruce Ratliff Hinson, MD	January 24
Earl R. Muntz, MD	February 4
Claude Marion Bloss, Jr., MD	February 24
Lewis C. Taylor, MD	March 3

## Centralized credentialing *(continued)*

This JCAHO interpretation focuses on the heart of the issue. A centralized credentialing collection service acts only as the information collection mechanism; health care facilities retain all decision-making authority required to fulfill their statutory obligations pertaining to granting of clinical privileges and medical staff membership.

When implementing a centralized credentialing collection service, the sponsoring organization should develop policies and procedures on the data collection process. These policies procedures should consider both federal and medical law. Confidentiality and procedure policies need to be created on what data should be collected and how it will be distributed as a vital step in fulfilling legal requirements. Additionally, each participating facility needs to reflect the use of an outside collection agency in its bylaws and credentialing procedures.

By determining in advance which policies are necessary and reviewing state regulations, centralized credentialing collection services can minimize legal implications while assisting health care facilities in fulfilling their credentialing requirements.

### Tulsa County Medical Society's experience

Four years ago, TCMS committed its resources to providing a comprehensive, state-of-the-art, computerized credentials verification process to area health care facilities. There are presently twelve facilities contracted with the service: Baptist Regional Health Center (Miami), Cancer Treatment Center of Tulsa, Children's Medical Center, Claremore Regional Hospital, Doctors' Hospital, Emergency Medical Services Authority, Hillcrest Medical Center, Laureate Psychiatric Clinic & Hospital, Medical Care Associates of Tulsa, St. John Medical Center, Surgicare of Tulsa, and Tulsa County Medical Society.

To date over 700 applications have been processed by the service, including applications for MD's, DO's, DPM's, DDS's, and allied health practitioners.

The Reappointment Assistance Service was inaugurated in January 1990, providing verification of licenses, narcotics registrations, and insurance certificates to the contracted facilities. In September 1990, the service began querying the National Practitioner Data Bank on behalf of its contracted facilities. The software program prints the Bank query from the information contained in the service's database.

Reappointment assistance services are provided for approximately 1,700 practitioners. *(continued)*



*Oklahoma State Department of Health*

## Health department institutes new rabies guidelines and routines



Oklahoma is in the middle of an animal rabies epidemic. The Oklahoma State Department of Health's Public Health Laboratory found rabies virus in 173 animals in 1991, a 31% increase over 1990 (132 animals) and a 70% increase over 1989 (102). Oklahoma was 10th the nation for the number of rabid animals in 1991, but will certainly be higher in 1992.

More than 500 Oklahomans were exposed to potentially rabid animals in 1991 and received post-exposure prophylaxis (PEP) at a cost of \$1,000 to \$1,500 each, a total of a half million dollars. Although costly, PEP is effective in preventing an otherwise fatal disease. In 1991, fatal cases of human rabies occurred in Texas, Arkansas, and Georgia.

The primary reservoir of animal rabies in Oklahoma is the skunk, which comprises 73% of rabid animals tested by the Oklahoma State Department of Health. However, any wild, warm-blooded carnivore is a potential host; Oklahoma regularly reports rabid raccoons, foxes, and bats. In turn, these animals expose pets and livestock: 17 cattle, 7 horses, 7 cats, and 7 dogs had autopsy-proven rabies in Oklahoma in 1991; most had been exposed to rabid skunks. Conversely, rodents or lagomorphs, which include mice, rats, squirrels, and rabbits, very rarely acquire rabies; Oklahoma has not had a rabid rodent or lagomorph for more than 40 years.

Since dog and cat bites represent the most common potential human exposure to rabies, vaccination of pets against rabies remains the best way to reduce human exposure. Other steps to reduce rabies include stray animal control, avoiding contact with wild animals, and not keeping wild animals as pets (most notably, raccoons, skunks, and foxes). Included in the category of wild animals are ferrets and potbellied pigs, which are becoming a worrisome problem because of their increasing popularity as pets.

Quarantine periods cannot be used to determine if wild animals are rabid because the incubation periods for rabies are unknown.

Exposed persons should receive PEP unless it can be proven that the animal is not rabid by testing its brain, or, if the animal is a dog or cat, through a 10-day quarantine. The current recommended protocol for PEP has changed in the past decade, and now consists of both human rabies immune globulin (RIG) and the human diploid cell vaccine (HDCV). On the first day (Day 1), up to half of the RIG dose is infiltrated around the site of the bite and the rest is administered intramuscularly. Simultaneously, the first dose of HDCV should be given in the deltoid (not the gluteal region, and away from the RIG injection). Subsequent HDCV doses are given on days 3, 7, 14, and 28 for a total of 5 doses. Additional information can be obtained from the Oklahoma State Department of Health, (405) 271-4060, 24 hours a day, 7 days a week.

The OSDH no longer performs routine rabies testing on weekends or holidays. However, testing is still available on weekends if a true emergency arises; discuss the case with the health department "on call" epidemiologist at the above number. Any animal heads received for emergency testing before 11 AM will be tested and reported the same day; otherwise they will be done the next day. Currently, any heads received for routine testing over the weekend or on a holiday will be tested and reported on the first following regular workday. J

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## DEATHS

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### Claude Marion Bloss, Jr., MD 1910 - 1992

OSMA Life Member Claude M. Bloss, Jr., MD, Oklahoma City, died February 24, 1992. He was born in Brown, Okla, and graduated from the University of Oklahoma School of Medicine in 1937. Dr Bloss had a private internal medicine practice in Okemah for two years before entering the US Army Medical Corps in 1940. He served until 1945, attaining the rank of lieutenant colonel. After the war Dr Bloss established a practice in Holdenville, then moved to Oklahoma City in 1961. J

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## Centralized credentialing (continued)

Please contact the TCMS Centralized Credentialing Collection Service for more information about the initial appointment and reappointment process at 2021 South Lewis Avenue, Suite 560, Tulsa, Oklahoma 73104. The telephone number is (918) 742-2368. J



# OKLAHOMA STATE MEDICAL ASSOCIATION

## 86th ANNUAL MEETING

Marriott Hotel, Oklahoma City

May 28-31, 1992

The 86th Annual Meeting of the Oklahoma State Medical Association House of Delegates will be held May 29-31, 1992. The OSMA Board of Trustees will meet on Thursday, May 28. Help shape the future of medicine in Oklahoma by attending this annual event. This year's OSMA Presidents' Inaugural Reception and Dinner on Saturday evening, May 30, honors outgoing OSMA President Billy Dale Dotter, MD; new

OSMA President James D. Funnell, MD; outgoing OSMA Auxiliary President Mrs Susan Paddock (Gary) and new OSMAA President Mrs Judy Critchfield (Carl). The 1992 meeting also will feature a scientific program on Friday afternoon, May 29, accredited for three hours of Category I CME Credit. The program was prepared by the University of Oklahoma College of Medicine.

### Thursday, May 28, 1992

- Noon: OSMA Executive Committee (OSMA headquarters)
- 1:30 pm: OSMA Board of Trustees (OSMA headquarters)

### Friday, May 29, 1992

(All functions in OKC Marriott Hotel)

- 7:00 am: OSMA Hospital Medical Staff Section Breakfast
- 7:00 am: OSMA Rural Caucus Breakfast
- 8:30 am: OSMA House of Delegates Opening Session
- 10:30 am: OSMA Reference Committees
- Noon: Candidates' Forum Luncheon
- 1:30 pm: OU College of Medicine Scientific Program (\$25 per person)
  - 1:30 pm—Acute Injury to the Eye: Reagan H. Bradford, Jr., MD
  - 2:30 pm—Drug Interactions and Antibiotic Update: Thomas L. Whitsett, MD
  - 3:30 pm—Anaphylaxis: James R. Claflin, MD
- 6:30 pm: OU College of Medicine Alumni Association Reception, Dinner and Dance (\$35 per person)  
Presentation of Physician of the Year and Amicus Medicinae Awards

### Saturday, May 30, 1992

(All Functions in OKC Marriott Hotel)

- 7:30 am: OSMA Past Presidents' Breakfast
- 9:00 am: Joint OSMA Young Physician/Resident Sections Meeting
- 9:00 am: Reference Committee Reports Available
- 10:00 am: OSMA Women in Medicine Program: Presenter: Gordon H. Deckert, M.D.
- Noon: OSMA Women in Medicine Luncheon (All Invited, \$15 per person)
- 1:30 pm: PLICO Loss Prevention Seminar
- 6:00 pm: OSMA Presidents' Reception (Reception and banquet \$50 per person)
- 7:00 pm: OSMA Presidents' Inaugural Banquet (Black Tie Optional)

### Sunday, May 31, 1992

(All functions in OKC Marriott Hotel)

- 9:00 am: OSMA House of Delegates Closing Session
- Noon: PLICO Forum (Immediately following House of Delegates)

## Writer expresses yet another view on February AIDS commentary

*To the Editor:* I read with dismay the recent articles in our JOURNAL [Feb '92] regarding the pro and con's of HIV antibody testing. Both articles appropriately cite references and points of view that bear on the issue of testing health care workers for AIDS. Both of the authors apparently begin their points of view with an assumption that it's sort of raining AIDS and the rain will never stop. The assumption that we will never be able to treat or cure AIDS may be inappropriate. Because of that I think both points of view are flawed; a different perspective is due that considers scientific progress.

At the 1991 meeting of the American Society of Clinical Pharmacology in San Antonio, a symposium regarding "Non Sense Therapeutics" was held. Unlike the humorous title, the conference reviewed the advances in direct nuclear interventions that pharmacology will see in the next 20 years. The major subject of the conference was the inhibition of the start stop sequences of human genetic transcription. The foundation has been established and the science is robust. The impetus for the work is understanding the start stop sequences for transcription of the HIV DNA molecules. The oligonucleotides that do this work are defined. They sterilize cells infected with HIV and clear the genome of the rogue genetic material. The only question is not will it work, but when will we have these medicines?

At the most recent ASCPT meeting an "Update on AIDS" was held. The speakers reviewed the broad spectrum of additional scientific approaches to defeat

the HIV virus. The material included information regarding: (1) Non-nucleoside HIV reverse transcriptase inhibition,.... It is happening and the drug models work; (2) HIV protease inhibition.... It is functional and it renders viral particles non-infectious; (3) Anti-HIV immunotoxins.... They are built, they work, and they are HIV lethal; and (4) HIV-TAT inhibition.... Blocking of generation of reversers transcriptase RNA can be done, it works and blocks the production of HIV DNA generation.

In all, the last two years have seen five separate distinct attacks on the life cycle of a virus initiated and moved from imagination to reality. Success in tissue culture and in animals models has been demonstrated and human clinical trials are beginning. The tales of this research will be told and will no doubt be very exciting. If the scientific establishment bats .400 on this problem we should have at least two new total drug approaches to potentially totally relegate AIDS to the place it so rightly deserves. If these views of the AIDS problem are accurate, and if they are successful at eradicating AIDS, do we want a law requiring mandatory testing? Because the triviality of this problem may soon be expressed, shouldn't we consider the pro and con of HIV mandatory screening from this perspective? We certainly don't need mandatory testing when the possibility of total cure is an eminent possibility.

—Carl V. Manion, MD  
Oklahoma City

## Article overlooks ORU's family practice graduates of the 1980s

*To the Editor:* I read with interest the article on "The Medical Education System in Oklahoma" (March 1992 *Journal Oklahoma State Medical Association*). The article was of special interest in stating (correctly) that there are only two medical schools in Oklahoma—the OU College of Medicine with "campuses" at Oklahoma City and Tulsa, and the College of Osteopathic Medicine—OSU. The article proceeds to produce data from primarily the 80's and some incidental data from 1990 and 1991.

It should be noted, at the minimum as a point of interest, that there was a third medical school in the 1980's, the Oral Roberts University School of Medicine, which closed in 1989.

Less well known is that for the period of 1980-1988, ORU graduates selected family practice at a

rate of 36.6%!, the highest percent of any allopathic medical school in the US (as reported in the *Family Medicine Journal*, March/April 1989), and three times greater than the 1991 OU percentage. Further, with the closure of the School of Medicine and the City of Faith Hospital, Hillcrest Medical Center (Tulsa) adopted the ORU Family Practice Residency Program which has, since re-accreditation, filled the residency positions in the last two years and actually increased its incoming group this year to eight residents.

I believe it is still possible to interest and attract medical students to family practice.

—John R. Crouch, Jr., MD  
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## New diarrhea treatment coming?

A safer treatment for travelers' diarrhea may be on the way for adults, pregnant women, and children, according to a study published in the April 8 *Journal of the American Medical Association*.

"Oral aztreonam, which is poorly absorbed, was well tolerated and was an effective therapy for bacterial diarrhea in US adults in Mexico," writes Herbert L. DuPont, MD, Center for infectious Diseases, University of Texas Medical School, Houston, with colleagues.

They write that the available treatments for bacterial diarrhea have problems, including "increasing rates of resistance, inability to use in children or pregnant women, [and] ineffectiveness against all important bacterial enteropathogens."

One concept under investigation are poorly absorbed, oral drugs. "Poorly absorbed drugs have the advantage of safety for use in children, pregnant women, and patients with renal and hepatic dysfunction," they write. Aztreonam is now only available as an intravenous treatment.

In a double-blind, placebo-controlled evaluation, the authors compared the effectiveness of oral aztreonam to a placebo in 191 US students with acute diarrhea acquired in Mexico. Aged 18 to 60 years, the students were in summer programs in Mexico from the University of San Diego and University of Arizona.

Ninety-three students were randomized to receive a placebo and 98 received aztreonam.

"The average duration of diarrheal disease was reduced by 50% in those patients who received aztreonam therapy compared with the subjects who received a placebo (44 hours vs 84 hours), regardless of etiology," they found.

"Pathogen eradication occurred in 95% of those receiving aztreonam and in 70% of those receiving the placebo," the authors found. "All bacterial agents were susceptible in vitro to aztreonam. The drug was well tolerated."

They write: "The present study provides evidence that aztreonam can be given safely and effectively to adults with bacterial diarrhea.... Further evaluation of aztreonam as therapy for bacterial diarrhea of adults and children is needed," they conclude, noting it may have other potential uses in treating resistant types of diarrheal disease in developing countries.

The study was supported in part by a grant from Bristol-Myers Squibb, Princeton, NJ. □

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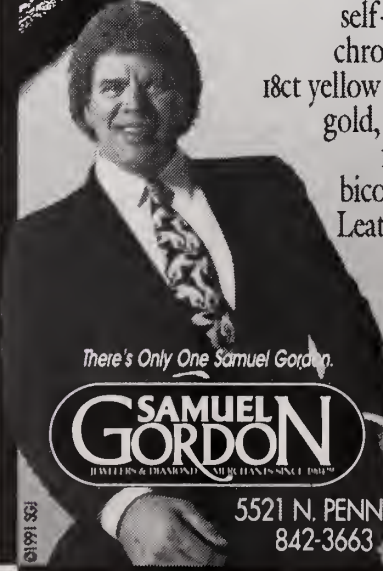


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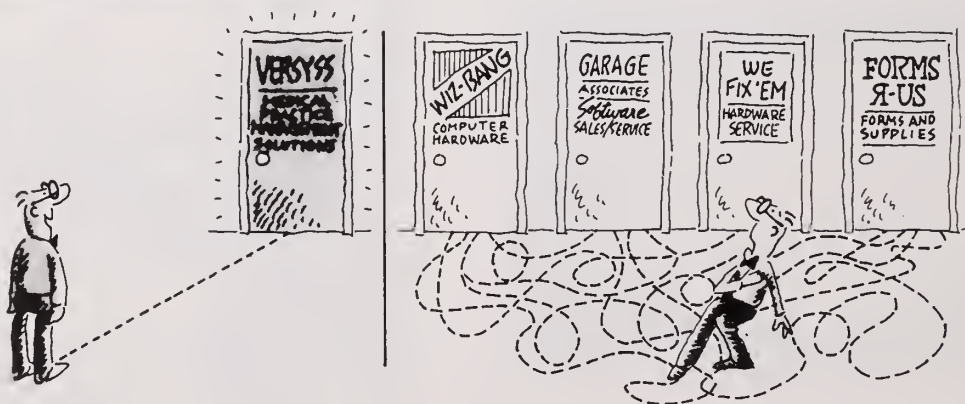




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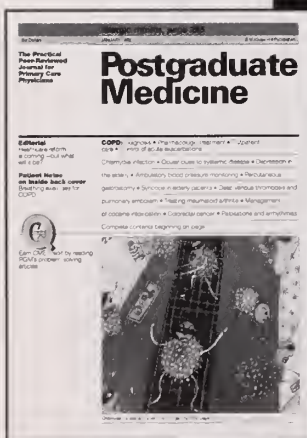
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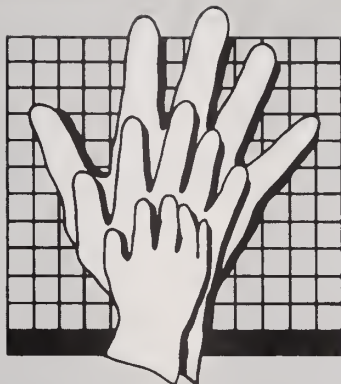
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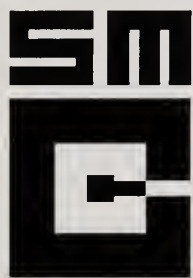
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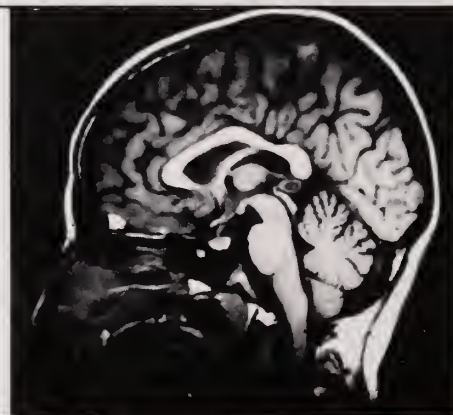


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All manuscripts should adhere to the style adopted by the American Medical Association as illustrated in *JAMA* and detailed in the AMA's *Manual of Style*. An abstract of 150 words or less should accompany each paper and should state (1) the exact question considered, (2) the key points of methodology and success of execution, (3) the key findings, and (4) the conclusion(s) directly supported by these findings. Footnotes, bibliographies, and legends for illustrations should be typewritten, double-spaced, on separate sheets. References are to be listed in the order of their appearance in the article.

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### News

Readers are encouraged to submit news items of interest to Oklahoma physicians. Where dates of meetings, etc, are important, please remember that each issue closes on the first day of the *preceding* month and reaches subscribers in the latter half of the month of publication.

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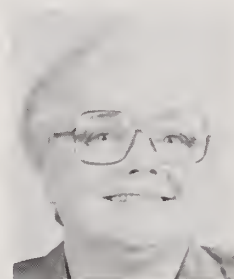
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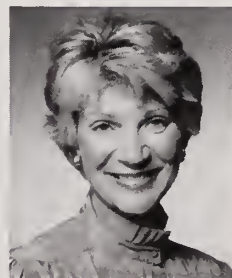
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■ **South Community Hospital in Oklahoma City** has officially changed its name to Southwest Medical Center (SMC) of Oklahoma. The name change ceremony was held March 11. "It was exciting to recognize the significant growth of South Community Hospital with a name that more appropriately reflects what this hospital has become, said SMC President Ray Branson. In conjunction with the name change, SMC also dedicated its new Jim Thorpe Rehabilitation Center.

■ **Governor David Walters has named Theodore J. Brickner, MD, Tulsa,** to his commission on Oklahoma Health Care. It is the commission's responsibility to study the problems of the state's health care system and make recommendations for its improvement. Those recommendations will be presented to the legislature in 1993.

■ **William M. Brammer, MD, now of Dalton, Ga,** was named winner of the Charlotte S. Leebron Memorial Trust Award at the March 26 meeting of the JOURNAL's Editorial Board. The award is presented annually to the author(s) of the "most worthy" scientific paper published in the JOURNAL during the preceding year. Dr Brammer was practicing in Oklahoma City when he wrote the winning paper, "Diagnosing Deep Venous Thrombosis in the 1990s," which appeared in the March 1991 issue. He has asked that his award be given to the radiology residency program at Baptist Medical Center, where he completed an MRI fellowship.

Also at the Editorial Board meeting, John R. Perkins, MD, Elk City, was named winner of the award for the best photo used on a JOURNAL cover during 1991. Dr Perkins' photo of two children crossing a stream was published on the cover of the February 1991 issue. His award will be presented at this month's annual meeting of the OSMA House of Delegates.

■ **Several awards are to be presented at the annual dinner of the University of Oklahoma College of Medicine Alumni Association, May 29, during the OSMA Annual Meeting.** Dr William G. Bernhardt, Midwest City, will receive the award as Physician of the Year, Private Practice, and Dr Richard A. Marshall,

Tulsa, will be named Physician of the Year, Academic Medicine. Dr William Knisely, professor emeritus of anatomical sciences at the OU College of Medicine in Oklahoma City will receive the Amicus Medicinae (Friend of Medicine) Award.

■ **The American Medical Association (AMA) will** assist in developing a form for recording the medical and genetic history of adopted children. Health-related information about the birth parents, if it is known, would become part of the child's permanent file. The information would be made available to adoptive parents. The Council on Legislation has prepared a model state bill that would protect the confidentiality of all parties. The Medical Student Section, which proposed the action, said Wisconsin is the only state that requires the courts to furnish adoptive parents with the medical history of the child's biological family. Many states use medical history forms that are not adequate for collecting genetic information, the section said.

■ **J. Michael Hudson has been named acting HCFA administrator,** replacing Gail R. Wilensky, PhD, who has been appointed to the White House as deputy assistant to the President for Policy Development. It is expected that William Toby, HCFA Regional Administrator for New York, ultimately will be named to fill the HCFA position.

■ **The AMA Auxiliary is conducting a study to** determine if its name is still relevant to its mission. Results of a questionnaire circulated by the auxiliary indicated that the organization (1) needs to be recognized as the AMA's full partner, not as a subservient group; (2) should be viewed as a group of highly motivated individuals who uphold the highest ideals of medicine; (3) helps its members conduct community service projects that lead to healthier life-styles; and (4) provides an opportunity for spouses to share medical families' special concerns. The new name is expected to reflect the survey findings. Some of the options suggested are AMA Alliance, AMA Affiliate, American Physicians' Spouses of America, Advocates for a Healthy America, and Volunteers for a Healthy America. A final report on the new name will be presented to the AMAA House of Delegates in June.

□

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‡ In some patients, the antihypertensive effect may diminish toward the end of the once-daily dosing interval. In such patients, an increase in dosage or twice-daily administration may be warranted.

ACCUPRIL is available in 10, 20, and 40 mg tablets. Usual initial starting dosage is 10 mg once daily.

ACCUPRIL is contraindicated in patients who are hypersensitive to this product and in patients with a history of angioedema related to previous treatment with an ACE inhibitor.

Please see brief summary of prescribing information on following page.



## Accupril® (Quinapril Hydrochloride Tablets)

### USE IN PREGNANCY

When used in pregnancy during the second and third trimesters, ACE inhibitors can cause injury and even death to the developing fetus. When pregnancy is detected, ACCUPRIL should be discontinued as soon as possible. See WARNINGS, Fetal/Neonatal Morbidity and Mortality.

Before prescribing, please see full prescribing information. A brief summary follows.

### INDICATIONS AND USAGE

ACCUPRIL is indicated for the treatment of hypertension. It may be used alone or in combination with thiazide diuretics. In using ACCUPRIL, consideration should be given to the fact that another angiotensin-converting enzyme (ACE) inhibitor, captopril, has caused agranulocytosis, particularly in patients with renal impairment or collagen vascular disease. Available data are insufficient to show that ACCUPRIL does not have a similar risk (see WARNINGS).

### CONTRAINDICATIONS

ACCUPRIL is contraindicated in patients who are hypersensitive to this product and in patients with a history of angioedema related to previous treatment with an ACE inhibitor.

### WARNINGS

**Angioedema.** Angioedema of the face, extremities, lips, tongue, glottis, and larynx has been reported in patients treated with ACE inhibitors and has been seen in 0.1% of patients receiving ACCUPRIL. Angioedema associated with laryngeal edema can be fatal. If laryngeal stridor or angioedema of the face, tongue, or glottis occurs, treatment with ACCUPRIL should be discontinued immediately, the patient treated in accordance with accepted medical care, and carefully observed until the swelling disappears. In instances where swelling is confined to the face and lips, the condition generally resolves without treatment; antihistamines may be useful in relieving symptoms. **Where there is involvement of the tongue, glottis, or larynx likely to cause airway obstruction, emergency therapy including, but not limited to, subcutaneous epinephrine solution 1:1000 (0.3 to 0.5 mL) should be promptly administered (see ADVERSE REACTIONS).**

**Hypotension:** Symptomatic hypotension was rarely seen in uncomplicated hypertensive patients treated with ACCUPRIL but, as with other ACE inhibitors, it is a possible consequence of therapy in salt/volume depleted patients, such as those previously treated with diuretics or dietary salt restriction or who are on dialysis (see PRECAUTIONS, DRUG INTERACTIONS, and ADVERSE REACTIONS). In controlled studies, syncope was observed in 0.4% of patients (N = 3203); this incidence was similar to that observed for captopril (1%) and enalapril (0.8%).

In patients with concomitant congestive heart failure, with or without associated renal insufficiency, ACE inhibitor therapy may cause excessive hypotension, which may be associated with oliguria or azotemia and, rarely, with acute renal failure and death. In such patients, ACCUPRIL therapy should be started at the recommended dose under close medical supervision. These patients should be followed closely for the first 2 weeks of treatment and whenever the dosage of antihypertensive medication is increased (see DOSAGE AND ADMINISTRATION).

If symptomatic hypotension occurs, the patient should be placed in the supine position and, if necessary, normal saline may be administered intravenously. A transient hypotensive response is not a contraindication to further doses; however, lower doses of ACCUPRIL or reduced concomitant diuretic therapy should be considered.

**Neutropenia/Agranulocytosis:** Another ACE inhibitor, captopril, has been shown to cause agranulocytosis and bone marrow depression rarely in patients with uncomplicated hypertension, but more frequently in patients with renal impairment, especially if they also have a collagen vascular disease such as systemic lupus erythematosus or scleroderma. Agranulocytosis did occur during ACCUPRIL treatment in one patient with a history of neutropenia during previous captopril therapy. Available data from clinical trials of ACCUPRIL are insufficient to show that, in patients without prior reactions to other ACE inhibitors, ACCUPRIL does not cause agranulocytosis at similar rates. As with other ACE inhibitors, periodic monitoring of white blood cell counts in patients with collagen vascular disease and/or renal disease should be considered.

**Fetal/Neonatal Morbidity and Mortality:** ACE inhibitors can cause fetal and neonatal morbidity and death when administered to pregnant women. Several dozen cases have been reported in the world literature. When pregnancy is detected, ACE inhibitors should be discontinued as soon as possible.

The use of ACE inhibitors during the second and third trimesters of pregnancy has been associated with fetal and neonatal injury, including hypotension, neonatal skull hypoplasia, anuria, reversible or irreversible renal failure, and death. Oligohydramnios has also been reported, presumably resulting from decreased fetal renal function; oligohydramnios in this setting has been associated with fetal limb contractures, craniofacial deformation, and hypoplastic lung development. Prematurity, intrauterine growth retardation, and patent ductus arteriosus have also been reported, although it is not clear whether these occurrences were due to the ACE inhibitor exposure.

These adverse effects do not appear to have resulted from intrauterine ACE inhibitor exposure that has been limited to the first trimester. Mothers whose embryos and fetuses are exposed to ACE inhibitors only during the first trimester should be so informed. Nonetheless, when patients become pregnant, physicians should make every effort to discontinue the use of ACCUPRIL as soon as possible.

Rarely (probably less often than once in every thousand pregnancies), no alternative to ACE inhibitors will be found. In these rare cases, the mothers should be apprised of the potential hazards to their fetuses, and serial ultrasound examinations should be performed to assess the intraamniotic environment.

If oligohydramnios is observed, ACCUPRIL should be discontinued unless it is considered life-saving for the mother. Contraction stress testing (CST), a non-stress test (NST), or biophysical profiling (BPP) may be appropriate, depending upon the week of pregnancy. Patients and physicians should be aware, however, that oligohydramnios may not appear until after the fetus has sustained irreversible injury.

Infants with histories of *in utero* exposure to ACE inhibitors should be closely observed for hypotension, oliguria, and hyperkalemia. If oliguria occurs, attention should be directed toward support of blood pressure and renal perfusion. Exchange transfusion or dialysis may be required as a means of reversing hypotension and/or substituting for disordered renal function. Removal of ACCUPRIL, which crosses the placenta, from the neonatal circulation is not significantly accelerated by these means. No teratogenic effects of ACCUPRIL were seen in studies of pregnant rats and rabbits. On a mg/kg basis, the doses used were up to 180 times (in rats) and one time (in rabbits) the maximum recommended human dose.

### PRECAUTIONS

#### General

**Impaired renal function:** As a consequence of inhibiting the renin-angiotensin-aldosterone system, changes in renal function may be anticipated in susceptible individuals. In patients with severe heart failure whose renal function may depend on the activity of the renin-angiotensin-aldosterone system, treatment with ACE inhibitors, including ACCUPRIL, may be associated with oliguria and/or progressive azotemia and rarely acute renal failure and/or death.

In clinical studies in hypertensive patients with unilateral or bilateral renal artery stenosis, increases in blood urea nitrogen and serum creatinine have been observed in some patients following ACE inhibitor therapy. These increases were almost always reversible upon discontinuation of the ACE inhibitor and/or diuretic therapy. In such patients, renal function should be monitored during the first few weeks of therapy.

Some hypertensive patients with no apparent preexisting renal vascular disease have developed increases in blood urea and serum creatinine, usually minor and transient, especially when ACCUPRIL has been given concomitantly with a diuretic. This is more likely to occur in patients with preexisting renal impairment. Dosage reduction and/or discontinuation of any diuretic and/or ACCUPRIL may be required.

**Evaluation of hypertensive patients should always include assessment of renal function (see DOSAGE AND ADMINISTRATION).**

**Hyperkalemia and potassium-sparing diuretics:** In clinical trials, hyperkalemia (serum potassium  $\geq 5.8$  mmol/L) occurred in approximately 2% of patients receiving ACCUPRIL. In most cases, elevated serum potassium levels were isolated values which resolved despite continued therapy. Less than 0.1% of patients discontinued therapy due to hyperkalemia. Risk factors for the development of hyperkalemia include renal insufficiency, diabetes mellitus, and the concomitant use of potassium-sparing diuretics, potassium supplements, and/or potassium-containing salt substitutes, which should be used cautiously, if at all, with ACCUPRIL (see PRECAUTIONS, Drug Interactions).

**Cough:** Cough has been reported with the use of ACE inhibitors. Characteristically, the cough is nonproductive, persistent, and resolves after discontinuation of therapy. ACE inhibitor-induced cough should be considered as part of the differential diagnosis of cough.

**Surgery/anesthesia:** In patients undergoing major surgery or during anesthesia with agents that produce hypotension, ACCUPRIL will block angiotensin II formation secondary to compensatory renin release. If hypotension occurs and is considered to be due to this mechanism, it can be corrected by volume expansion.

#### Information for Patients

**Pregnancy:** Female patients of childbearing age should be told about the consequences of second- and third-trimester exposure to ACE inhibitors, and they should also be told that these consequences do not appear to have resulted from intrauterine ACE-inhibitor exposure that has been limited to the first trimester. These patients should be asked to report pregnancies to their physicians as soon as possible.

**Angioedema:** Angioedema, including laryngeal edema, can occur with treatment with ACE inhibitors, especially following the first dose. Patients should be so advised and told to report immediately any signs or symptoms suggesting angioedema (swelling of face, extremities, eyes, lips, tongue, difficulty in swallowing or breathing) and to stop taking the drug until they have consulted with their physician (see WARNINGS).

**Symptomatic hypotension:** Patients should be cautioned that lightheadedness can occur, especially during the first few days of ACCUPRIL therapy, and that it should be reported to a physician. If actual syncope occurs, patients should be told to not take the drug until they have consulted with their physician (see WARNINGS).

All patients should be cautioned that inadequate fluid intake or excessive perspiration, diarrhea, or vomiting can lead to an

## Accupril® (Quinapril Hydrochloride Tablets)

excessive fall in blood pressure because of reduction in fluid volume, with the same consequences of lightheadedness and possible syncope.

Patients planning to undergo any surgery and/or anesthesia should be told to inform their physician that they are taking an ACE inhibitor.

**Hyperkalemia:** Patients should be told not to use potassium supplements or salt substitutes containing potassium without consulting their physician (see PRECAUTIONS).

**Neutropenia:** Patients should be told to report promptly any indication of infection (eg, sore throat, fever) which could be a sign of neutropenia.

**NOTE:** As with many other drugs, certain advice to patients being treated with ACCUPRIL is warranted. This information is intended to aid in the safe and effective use of this medication. It is not a disclosure of all possible adverse or intended effects.

### Drug Interactions

**Concomitant diuretic therapy:** As with other ACE inhibitors, patients on diuretics, especially those on recently instituted diuretic therapy, may occasionally experience an excessive reduction of blood pressure after initiation of therapy with ACCUPRIL. The possibility of hypotensive effects with ACCUPRIL may be minimized by either discontinuing the diuretic or cautiously increasing salt intake prior to initiation of treatment with ACCUPRIL. If it is not possible to discontinue the diuretic, the starting dose of quinapril should be reduced (see DOSAGE AND ADMINISTRATION).

**Agents increasing serum potassium:** Quinapril can attenuate potassium loss caused by thiazide diuretics and increase serum potassium when used alone. If concomitant therapy of ACCUPRIL with potassium-sparing diuretics (eg, spironolactone, triamterene, or amiloride), potassium supplements, or potassium-containing salt substitutes is indicated, they should be used with caution along with appropriate monitoring of serum potassium (see PRECAUTIONS).

**Tetracycline and other drugs that interact with magnesium:** Simultaneous administration of tetracycline with ACCUPRIL reduced the absorption of tetracycline by approximately 28% to 37%, possibly due to the high magnesium content in ACCUPRIL tablets. This interaction should be considered if coprescribing ACCUPRIL and tetracycline or other drugs that interact with magnesium.

**Lithium:** Increased serum lithium levels and symptoms of lithium toxicity have been reported in patients receiving concomitant lithium and ACE inhibitor therapy. These drugs should be co-administered with caution, and frequent monitoring of serum lithium levels is recommended. If a diuretic is also used, it may increase the risk of lithium toxicity.

**Other agents:** Drug interaction studies of ACCUPRIL with other agents showed:

- Multiple dose therapy with propranolol or cimetidine has no effect on the pharmacokinetics of single doses of ACCUPRIL.
- The anticoagulant effect of a single dose of warfarin (measured by prothrombin time) was not significantly changed by quinapril coadministration twice-daily.
- ACCUPRIL treatment did not affect the pharmacokinetics of digoxin.
- No pharmacokinetic interaction was observed when single doses of ACCUPRIL and hydrochlorothiazide were administered concomitantly.

### Carcinogenesis, Mutagenesis, Impairment of Fertility

Quinapril hydrochloride was not carcinogenic in mice or rats when given in doses up to 75 or 100 mg/kg/day (50 to 60 times the maximum human daily dose, respectively, on a mg/kg basis and 3 to 10 times the maximum human daily dose when based on a mg/m<sup>2</sup> basis) for 104 weeks. Female rats given the highest dose level had an increased incidence of mesenteric lymph node hemangiomas and skin/subcutaneous lipomas. Neither quinapril nor quinaprilate were mutagenic in the Ames bacterial assay with or without metabolic activation. Quinapril was also negative in the following genetic toxicology studies: *in vitro* mammalian cell point mutation, sister chromatid exchange in cultured mammalian cells, micronucleus test with mice, *in vitro* chromosome aberration with V79 cultured lung cells, and in an *in vivo* cytogenetic study with rat bone marrow. There were no adverse effects on fertility or reproduction in rats at doses up to 100 mg/kg/day (60 and 10 times the maximum daily human dose when based on mg/kg and mg/m<sup>2</sup>, respectively).

### Pregnancy

**Pregnancy Categories C (first trimester) and D (second and third trimesters):** See WARNINGS, Fetal/Neonatal Morbidity and Mortality.

### Nursing Mothers

It is not known if quinapril or its metabolites are secreted in human milk. Quinapril is secreted to a limited extent, however, in human milk, caution should be exercised when ACCUPRIL is given to a nursing mother.

### Geriatric Use

Elderly patients exhibited increased area under the plasma concentration time curve (AUC) and peak levels for quinapril compared to values observed in younger patients, this appeared to relate to decreased renal function rather than to age itself. In controlled and uncontrolled studies of ACCUPRIL where 918 (21%) patients were 65 years and older, no overall differences in effectiveness or safety were observed between older and younger patients. However, greater sensitivity of some older individual patients cannot be ruled out.

### Pediatric Use

The safety and effectiveness of ACCUPRIL in children have not been established.

### ADVERSE REACTIONS

ACCUPRIL has been evaluated for safety in 4960 subjects and patients. Of these, 3203 patients, including 655 elderly patients, participated in controlled clinical trials. ACCUPRIL has been evaluated for long-term safety in over 1400 patients treated for 1 year or more.

Adverse experiences were usually mild and transient.

Discontinuation of therapy because of adverse events was required in 4.7% of patients treated with ACCUPRIL in placebo-controlled hypertension trials.

Adverse experiences probably or possibly related to therapy or of unknown relationship to therapy occurring in 1% or more of the 1563 patients in placebo-controlled hypertension trials who were treated with ACCUPRIL are shown below.

Adverse Events in Placebo-Controlled Trials

	ACCUPRIL (N = 1563) Incidence (Discontinuation)	Placebo (N = 579) Incidence (Discontinuation)
Headache	5.6 (0.7)	10.9 (0.7)
Dizziness	3.9 (0.8)	2.6 (0.2)
Fatigue	2.6 (0.3)	1.0
Coughing	2.0 (0.5)	0.0
Nausea/Vomiting	1.4 (0.3)	1.9 (0.2)
Abdominal Pain	1.0 (0.2)	0.7

### See PRECAUTIONS, Cough

Clinical adverse experiences probably or possibly related, or of uncertain relationship to therapy, occurring in 0.5% to 1.0% (except as noted) of the patients treated with ACCUPRIL (with or without concomitant diuretic) in controlled or uncontrolled trials (N = 4397) and less frequent, clinically significant events seen in clinical trials or post-marketing experience (the rarer events are in italics) include (listed by body system):

#### General: back pain, malaise

**Cardiovascular:** palpitation, vasodilation, tachycardia, heart failure, hyperkalemia, myocardial infarction, cerebrovascular accident, hypertensive crisis, angina pectoris, orthostatic hypotension, cardiac rhythm disturbances

**Gastrointestinal:** dry mouth or throat, constipation, gastrointestinal hemorrhage, pancreatitis, abnormal liver function tests

#### Nervous/Psychiatric: somnolence, vertigo, syncope, nervousness, depression

**Integumentary:** increased sweating, pruritus, exfoliative dermatitis, photosensitivity reaction

#### Urogenital: acute renal failure

**Other:** amphybia, pharyngitis, sinusitis, bronchitis, agranulocytosis, thrombocytopenia

#### Fetal/Neonatal Morbidity and Mortality

See WARNINGS, Fetal/Neonatal Morbidity and Mortality.

**Angioedema:** angioedema has been reported in patients receiving ACCUPRIL (0.1%). Angioedema associated with laryngeal edema may be fatal. If angioedema of the face, extremities, lips, tongue, glottis, and/or larynx occurs, treatment with ACCUPRIL should be discontinued and appropriate therapy instituted immediately. (See WARNINGS.)

#### Clinical Laboratory Test Findings

**Hematology:** (See WARNINGS)

#### Hyperkalemia: (See PRECAUTIONS)

**Creatinine and blood urea nitrogen:** Increases (1.25 times the upper limit of normal) in serum creatinine and blood urea nitrogen were observed in 2% and 2%, respectively, of patients treated with ACCUPRIL alone. Increases are more likely to occur in patients receiving concomitant diuretic therapy than in those on ACCUPRIL alone. These increases often remit on continued therapy.

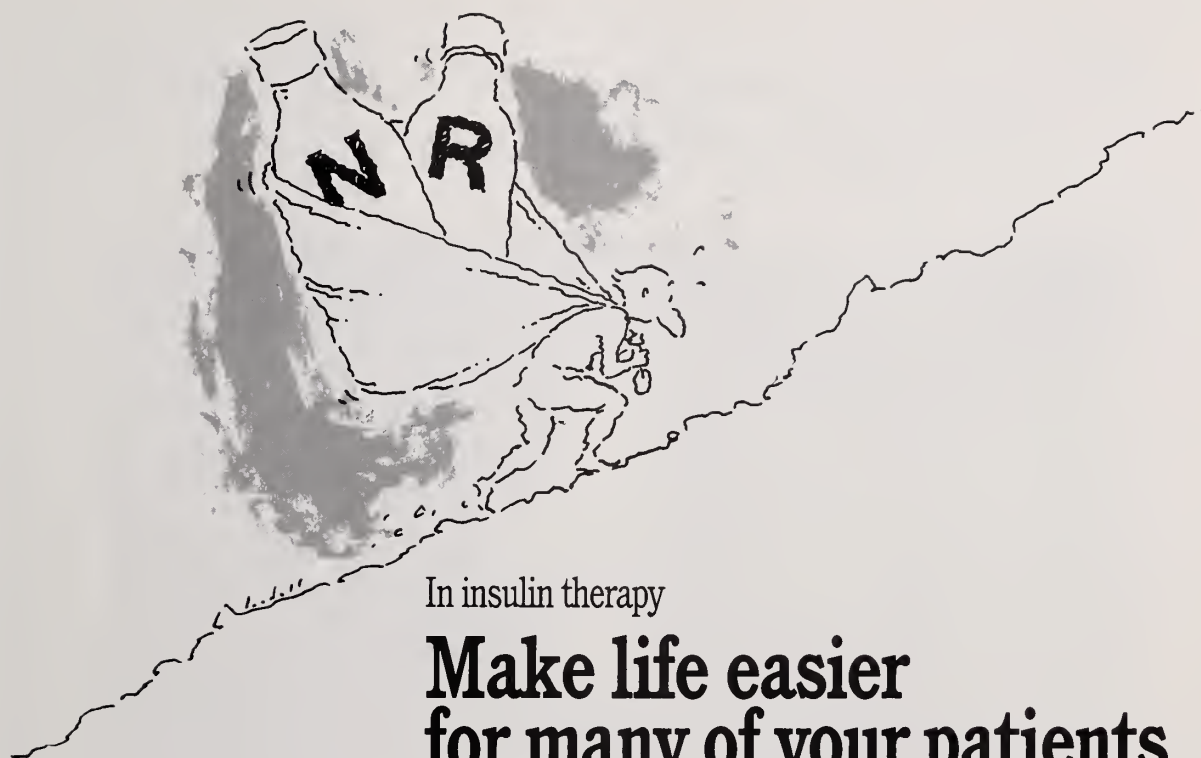
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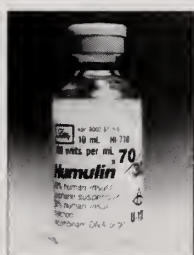
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# JOURNAL

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**ABOUT THE COVER**

The Indian Blanket is Oklahoma's official state wild flower.

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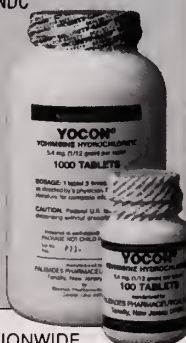
**Dosage and Administration:** Experimental dosage reported in treatment of erectile impotence.<sup>1,3,4</sup> 1 tablet (5.4 mg) 3 times a day, to adult males taken orally. Occasional side effects reported with this dosage are nausea, dizziness or nervousness. In the event of side effects dosage to be reduced to 1/2 tablet 3 times a day, followed by gradual increases to 1 tablet 3 times a day. Reported therapy not more than 10 weeks.<sup>3</sup>

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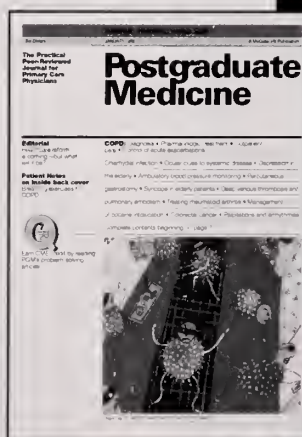


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## The Ides of April

In ancient Judea, according to accounts in a widely read Book, the tax collectors were scorned, and were even publicly reviled at times. But their authority was vast, and so powerful that a taxpayer named Joseph had to travel many leagues with his expectant wife on a cold winter trip to enroll his name with the tax gatherer.

Across the millennia and into our own United States, the tax gatherer has remained fearsome, and recently HEW Secretary Dr Louis Sullivan sardonically characterized the future national health service: "It will have the compassion of the Internal Revenue Service and the efficiency of the Post Office."

These disparate stories attest that, in any era, government relates fundamentally to its citizens by the forced extractions of tax money. Government collects taxes, using the armed might of its police powers, if needed. If there are no taxes, there is no government.

While some governments sometimes do other things besides collect taxes, tax collection is a necessary forerunner of all the other things that governments do, and this elemental truth is often suppressed. When the citizens petition for services from the government, the government must collect the taxes that will provide the service. There is no other way. Thus we can understand that nearly all political maneuvers deal with taxes/government services polarity. Who will be taxed how much in order to provide what government service to whom?

Rarely, if ever, is there a reasoned appraisal of what government activities are necessary and desirable, or unneeded or destructive. Rather, the courses of government programs may become determinants of political careers and political empires that have scanty relationship to the welfare of the affected citizen. Wars, revolutions, assassinations, and other major political crimes have resulted from taxes/ser-

vices conflicts. From the Boston Tea Party to Oklahoma's recent Provider Tax/Medicaid argument, the chronic conflict about who will be taxed to provide what to whom goes on with often destructive results.

After collecting taxes for a generation to provide health services, our society finds itself in a health care crisis. We have a dazzling maze of government programs that confuse, obfuscate, and harass more than help. The people's inability to purchase their own health care has become an economic problem based on overtaxation and overregulation. Logic dictates the problem eventually must be solved by deregulation, lower taxes, and an improved business climate.

Compulsory government services such as Medicaid, Medicare, and mandated insurance contracts worsen the delivery of health care since such services must be preceded by taxes that weaken the capital strength and cash flow of society while inefficiently buying an ever smaller menu of services.

While our government clamors for health care cost containment, it passes a multitude of laws and regulations that inexorably increase all business costs, including health care. To mandate workers comp coverage, unemployment insurance, CLIA laboratory regulations, OSHA rules, medical waste disposal regulations, Disability Act remodeling, and a multitude of licensing and certification requirements is irrational if cost containment is to be any part of the agenda. Congress cannot repeal the law of gravity, nor can they repeal the law that increased services require increased taxes.

It is time for a reappraisal of what services government should provide the people.

*Ray V. McIntyre, M.D.*



## American Medicine and the Uphill Struggle

This year is indeed a time when American medicine is struggling as it has never struggled before. Our attempt to maintain quality of care and access to care for our patients has never been tested as it is being tested today. We began the year with RBRVS along with new payments, new codes, and new definitions. We finally are getting the system running. This comes just in time because now all the third party payors are changing to the same CPT codes. This leaves us the tremendous job of working out an acceptable pay schedule for each of these companies.



We have seen 1992 as the year when the nation recognized AIDS and HIV-positive patients. This has also fired up the debate concerning physician and patient testing, and problems of confidentiality. The most important thing we recognized was that the problem with HIV and AIDS is not going to go away; it will persist as a national and international problem.

The new year also brought us OSHA, blood-borne pathogens, waste disposal, and the integrated problems of workers, workplaces, and inter-relationship of the patient with them. These new regulations, like the problem with AIDS, also are not going to go away. They will only continue to expand.

We are just now beginning to see what we are going to encounter with the disabilities act. The problems of discrimination, treatment, and availability of care will all be part of this act.

More recently, we have seen the provider tax, and once again we saw physicians unite to strongly reject this tax on the sick. My biggest worry for those who elected to participate in the tax is that, as you and I know, in the near future the federal treasury will no longer allow itself to be raided for matching funds. With the tax on the books, it, unfortunately, is going to be much easier to simply increase this tax to make up the shortfall.

The ultimate outcome of all this is a greater amount of physician time to be expended, with decreasing compensation for this time. At a point in history when patients have difficulty gaining access to the system, I am fearful this problem will only become greater. Ultimately, this will decrease the quality of care for those we care most about, our patients.

A large, stylized handwritten signature in dark ink, which appears to read "James J. Durrell M.D.".

# Late Sequelae of Hysterectomy and Diverticulosis: Colovaginal Fistulae

John C. Siegle, MD; James A. Glasgow, MD; Robert B. Chatfield, MD

Three cases of colovaginal fistulae were recently diagnosed and treated. Colovaginal fistulae are not commonly reported and their diagnosis may be difficult to make. Our cases presented with a complaint of vaginal discharge, history of hysterectomy, and diagnosis of diverticulosis. The diagnosis and treatment of colovaginal fistulae are discussed.

Colovaginal fistulae are not commonly reported.<sup>1-9</sup> Most cases present with an abnormal vaginal discharge and a history of hysterectomy,<sup>2-4,8</sup> while many have documentation of diverticulosis.<sup>1-9</sup> The diagnosis may be difficult but is necessary in planning a treatment course for this agonizing disorder. Once diagnosed, the usual treatment should be a one stage sigmoid colectomy with low anastomosis.<sup>11</sup>

## Case Reports

**Case 1.** OH, An 82-year-old female para 3 with a history of total abdominal hysterectomy and anterior vaginal repair in 1975, initially presented with a complaint of fecal soilage and inability to control her bowel movements. She stated that one of her deliveries was complicated by a "bad tear, which was poorly repaired at a home delivery" many years prior. Pelvic examination revealed a 5 cm mass on the right. Her vagina appeared intact with a moderate rectocele and retraction of her rectal sphincter. A diagnosis of rectal incontinence and pelvic mass was made. CAT scan showed a 4.4 cm by 3.7 cm cystic mass. An

exploratory laparotomy was performed, removing a benign ovarian cyst with hydrosalpinx. Noted were marked adhesions from the sigmoid colon to the vaginal apex. A posterior repair with sphincter plication was performed.

Postoperatively the patient did well for approximately 12 weeks, when she developed diarrhea and began passing feces per vagina. Speculum exam revealed feces coming from a 3 mm fistula at the apex of the vaginal cuff. The sigmoid vaginal fistula was confirmed by barium enema, also exhibiting multiple diverticula (Fig 1).

The patient underwent a sigmoid colectomy with closure of the fistula tract and subsequently has been symptom free.

**Case 2.** LL, A 55-year-old para 2 presented with a brownish discharge and postcoital spotting for 3 weeks. Her history was significant for a total abdominal hysterectomy and bilateral salpingo-oophorectomy for pelvic pain at age 35. Medications included conjugated estrogens 0.625 mg daily. Colposcopy revealed some small punctate hemorrhages consistent with vaginal atrophy. She was placed on estrogen cream but returned 6 weeks later with worsening symptoms. A follow-up colposcopy was performed and the fistula diagnosed. A barium enema documented diverticular disease and an intravenous pyelogram was normal. The patient underwent a sigmoid colectomy and closure of the vaginal fistula. Postoperatively she has had some loose stools but no vaginal leakage.

**Case 3.** JM is a 45-year-old female para 1 with a

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3-week history of foul smelling vaginal discharge. Her history included crampy abdominal pain and a hospital admission one year earlier for symptomatic diverticulitis. At age 31, she had undergone a hysterectomy with left salpingo-oophorectomy for pelvic pain. Due to severe inflammation and discomfort, an adequate office exam could not be performed. A barium enema documented diverticulosis but no fistula. The patient was placed briefly under general anesthesia, where colposcopy revealed a suspicious raised area at the vaginal apex. The fistula was cannulated with a Robinon sialogram catheter (# SCS-T-32-L) and injection of 50 cc of gastrograffin, followed by x-rays which revealed the sigmoid vaginal fistula (Figs 2 and 3). A sigmoid colectomy with fistula closure was performed. Postoperatively, her abdominal pain and vaginal discharge have completely subsided.

## Discussion

Three cases of sigmoidovaginal fistula are added to the literature. To date, there have been only 49 reported cases of sigmoidovaginal fistula. Due to the rarity of the condition, anecdotal experiences and case reports are helpful in managing patients with this serious, agonizing condition.

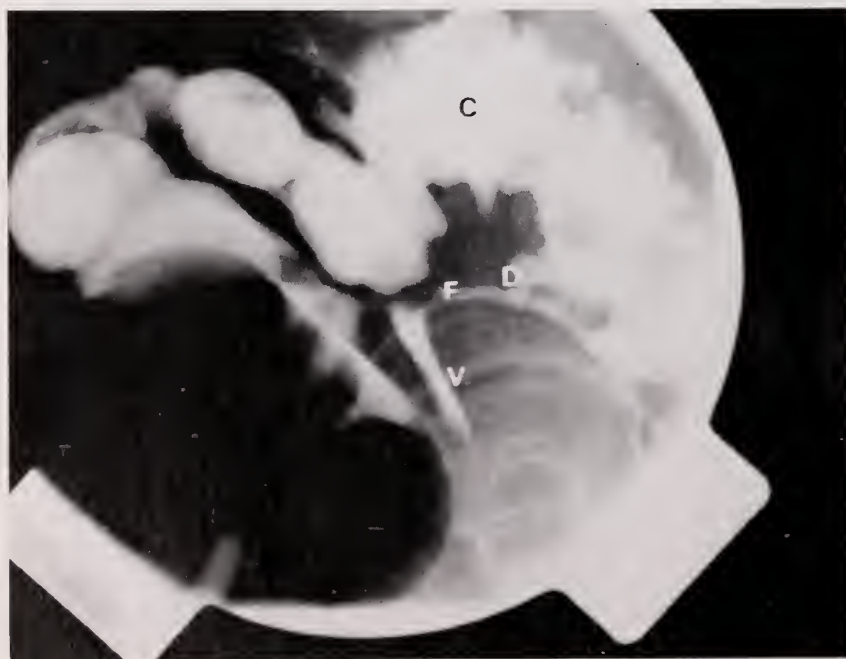
Most patients present with an abnormal vaginal discharge or vaginal flatus. The fecaloid discharge

may be extremely distressing but not always obvious to the clinician or to the patient. Our first patient presented initially with rectal incontinence and a pelvic mass. We became aware of the fecaloid nature of her discharge only when she experienced an episode of diarrhea, 12 weeks after her initial surgery. Case 2 presented with a brownish discharge and postcoital spotting. The last patient was so excoriated that an office speculum exam could not be tolerated. The fistula was so small when finally diagnosed that feces were never seen extruding from the fistula tract. None of our three patients experienced vaginal flatus which is diagnostic of colovaginal fistulas. Consequently, the diagnosis by clinical symptomatology was not obvious in any of our patients.

A history of hysterectomy is quite common in patients with sigmoid vaginal fistula, probably due to a lack of support to the pelvis when the uterus has been removed. All three of the fistulas we diagnosed were at the vaginal apex where the cervix had been removed many years before. The hysterectomies were all performed for benign disease and none had a history of radiation or other pelvic trauma.

Diverticular disease is the most common etiology of sigmoid vaginal fistulae,<sup>2,3,6</sup> and therefore a barium enema should be performed when one suspects a sigmoid vaginal fistula. The diverticular disease was inactive in all three of our patients; however, our third patient had been hospitalized for diverticulitis approximately one year earlier. The barium enema will diagnose the sigmoid diverticulae and help rule out other etiologies such as colon cancer or intrinsic bowel disease, ie, regional enteritis, which may be other causes for the fistula. The barium enema, however, cannot be expected to always be diagnostic since these fistulae are often small. The barium enema was diagnostic of the fistula in only one of our cases as illustrated in Figure 1. Therefore, other means of diagnosis should be used when one is suspicious of sigmoid vaginal fistula.

Many other means of diagnosing these fistulae have been described. Visual examination with speculum combined with colposcopy is a useful test for first line



**Figure 1.** Case 1. Barium enema exhibiting colovaginal fistula associated with diverticulosis. Colon (C). Diverticula (D). Fistula tract (F). Vagina (V).



evaluation. Colposcopy may be diagnostic<sup>9</sup> and was helpful in two of our three cases. Vaginography using a foley catheter with a 30 cc balloon<sup>7,12,13</sup> has been helpful. Other techniques, such as combined colovaginoscopy or CAT scan<sup>15</sup> may also be helpful and should be considered.

We were able to make the diagnosis of an extremely small fistula with the use of a Rabinon sialogram catheter, normally used in sialography of the parotid gland. The patient, JM, was too uncomfortable to withstand an office exam and therefore, was examined under anesthesia. The vagina was too relaxed to retain a foley catheter balloon and therefore a colposcopy was performed, revealing a small area of erythema. The blunt-tipped sialogram catheter allowed cannulation of the fistula without creating a false passageway, and the diagnosis was easily made with injection of renograffin and traditional radiography (Fig 2).

Treatment of all three of our patients was by sigmoid colectomy combined with vaginal closure as a one-stage procedure. The safety of this procedure has been established for treating sigmoid diverticulitis,<sup>11</sup> and all three of our patients tolerated the procedure without significant problems. We support the concept of one-stage treatment unless mitigating factors necessitate a multistage approach.

In summary, when patients present with a complaint of abnormal vaginal discharge and previous hysterectomy, the diagnosis of sigmoid vaginal fistula should be entertained. When diverticulosis is documented, a thorough search for a sigmoid vaginal fistula should be performed. Although the diagnosis may be difficult, management with a one-stage sigmoid colectomy will usually provide a satisfactory result for the patient. □

(continued)



**Figure 2.** Dye injected into colon (C) via sialogram catheter (arrow) cannulating a colovaginal fistula. (Case 3)



**Figure 3.** Lateral radiograph localizing dye in sigmoid colon in Case 2. Dye outlines colon (C) versus a false passageway. Sacrum (S). Femoral head (F). (Case 3)

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# Microbiological Diagnosis of Bacterial Vaginosis

D.J. Flournoy, PhD

The current microbiological method of diagnosing bacterial vaginosis is by Gram stain, not culture.

Vaginal infections are important because they affect many women of all ages<sup>1</sup> and because they can cause complications of pregnancy which include prematurity, amniotic fluid infection, histologic chorio-amnionitis and postcesarean endometritis.<sup>2</sup> Symptoms include discharge, foul odor, vaginal irritation and itching, frequency of urination, dysuria, bladder fullness, and nocturia.<sup>3</sup> Although specific pathogens are not identified in up to 49% of vaginal infections, most symptoms are attributed to yeast (usually *Candida albicans*), *Trichomonas vaginalis*, and various bacteria.<sup>3</sup> Symptoms of infection do not differ appreciably among the three etiological entities. Infection caused by "various bacteria" has been termed nonspecific bacterial vaginitis, *Haemophilus vaginalis* vaginitis, *Gardnerella vaginalis* vaginitis and, currently, bacterial vaginosis (BV). In addition, the term *vaginal bacteriosis* also has been proposed. Bacterial vaginosis can be the most difficult of the above-mentioned etiological entities to diagnose. The purpose of this report is to update the reader on current laboratory methods for the diagnosis of BV.

Bacterial vaginosis is a syndrome defined primarily by vaginal pH >4.5, the presence of thin homogeneous discharge, detection of "clue cells," and the presence of an amine odor after the addition of potassium hydroxide to vaginal secretions.<sup>3-10</sup> Al-

though the exact etiology of BV is unknown, the following organisms have been implicated: *Gardnerella vaginalis* (fastidious Gram variable bacilli),<sup>11,12</sup> *Bacteroides bivius* (anaerobic Gram negative bacilli),<sup>11,12</sup> *Mobiluncus* (anaerobic Gram variable curved bacilli),<sup>9,13</sup> *Peptostreptococcus prevoti*, and *asaccharolyticus* (anaerobic cocci)<sup>10</sup> and *Mycoplasma hominis*.<sup>2,12,14</sup> Organisms associated with BV are more likely to colonize the vagina from the gastrointestinal tract than to occur directly from sexual contact.<sup>9</sup> Indeed, the roles of *Chlamydia trachomatis* and *Neisseria gonorrhoeae* in BV are controversial.<sup>15</sup>

Originally, the microbiological diagnosis of BV was determined by culture of vaginal secretions for *G vaginalis* and other potential pathogens.<sup>5</sup> However,

## Related article, page 297.

there are several problems in diagnosing BV by bacterial culture. *Gardnerella vaginalis* can be found in up to 68% of otherwise healthy women,<sup>11,16</sup> thus isolation of this organism is not specific for BV. Anaerobic cultures (ie, for *Mobiluncus*, *Bacteroides*, *Peptostreptococcus*) are costly and time consuming, and anaerobes can be difficult to isolate and identify. Mycoplasma cultures are not readily available in most clinical laboratories. Finally, vaginal cultures often yield mixed isolates, and it is virtually impossible to determine which isolate or isolates (if any) are the pathogens.

Since BV apparently is caused by various microorganisms—many of which are difficult, costly, and time consuming to identify—it has become increas-

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ingly more common to diagnose BV by Gram stain alone. Gram-stained smears of vaginal secretions are less expensive, require less time to perform, and are more widely available than other laboratory methods. Indeed, the Gram stain is more specific and reliable than *G vaginalis* culture for diagnosing BV.<sup>10,17</sup>

In 1955, Gardner and Dukes<sup>5</sup> noted that vaginal epithelial cells covered with adherent Gram negative bacilli, "clue cells," were frequently observed in women with symptoms of BV, but not in clinically asymptomatic women. Clue cells were described as occurring in various stages of disintegration, showing indefinite outlines and having a granular cytoplasm due to a uniform covering of organisms now known as *Gardnerella vaginalis*. These organisms were frequently seen outside the epithelial cell borders. Later it was reported that the organisms most often adhering to vaginal epithelial cells were *G vaginalis* and *Mobiluncus*.<sup>17,18</sup> In 1983, Spiegel et al noted that women with BV had fewer lactobacilli and more mixed flora in their vagina than women without BV.<sup>6</sup> This finding was confirmed by other investigators.<sup>7,8</sup> Therefore BV also is characterized by a shift in vaginal microorganisms from the dominant flora of *Lactobacillus* sp to a mixed flora which may include *G vaginalis*, *Bacteroides*, *Mobiluncus* and *Mycoplasma hominis*. This alteration in vaginal flora is readily distinguished by Gram stain.<sup>1,6,7,10,19</sup> Table 1 shows a comparison of laboratory methods used to diagnose BV. Finally, it should be reiterated that cultures have no current role in the diagnosis of BV because they are nonspecific, unreliable, and misleading.<sup>20</sup>

#### Acknowledgment

V. Rohlman and D. Belknap deserve thanks for editorial assistance.

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Table 1. Comparison of Gram Stain Methods for Diagnosing BV

Gram Stain Criteria indication BV	Reference
Lactobacilli absent/decreased and other morphotypes increased	6
Lactobacilli <5/oif* and other morphotypes 5 or more	7, 19
Lactobacilli 5 or less/oif and Gardnerella morphotypes 6 or more	10
>40 Gram negative-variable coccobacilli/oif	1
Weighted scale by organism	19

\*oif (oil immersion field, total microscopic magnification 1000 X)

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# The Role of Exercise in Reducing Coronary Heart Disease and Associated Risk Factors

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Despite public health efforts, heart disease remains a leading cause of death and disease in the United States. There is sufficient evidence to justify the inclusion of regular exercise in efforts to reduce overall coronary heart disease (CHD) morbidity and mortality. This paper reviews the supportive evidence for this stance as well as the role of exercise in managing the major CHD risk factors of atherogenic serum lipids, hypertension, and obesity. Recognition of exercise as a lifestyle behavior is addressed and recommendations for prescribing exercise for adults interested in preventing CHD are presented.

Despite the effort directed at reducing coronary heart disease (CHD), over six million Americans are known to have CHD and over 500,000 deaths occur annually from this disease.<sup>1</sup> The purpose of this paper is to review the supportive evidence for the benefit of exercise in reducing CHD morbidity and mortality, and its role in managing the individual CHD risk factors of atherogenic lipids, hypertension, and obesity. Attention is given to the fact that exercise is a life-style and the issues that impede initiation and maintenance of exercise behavior must be addressed before an impact on any individual's cardiovascular health can be expected. Recommendations for the prescription of exercise for reducing CHD risk in adults will be outlined.

## Exercise and CHD Morbidity/Mortality

Epidemiological and prospective studies have supported the contention that exercise provides a protective effect against CHD.<sup>2</sup> Causal links have not been definitively established but proposed mechanisms for this effect are seen in Table 1.<sup>3</sup> Both occupational and leisure-time activity have been associated with reduced CHD.

One of the pioneering epidemiological studies establishing this positive association was carried out by Paffenbarger who found that San Francisco longshoremen who had jobs requiring heavy work output (>1876 kcal/week) had coronary death rates more than 40% less than those workers who expended less energy.<sup>4</sup> In a later study, Paffenbarger reported that CHD risk declined among Harvard alumni as leisure-time activity increased from <100 kcal/week to 5000 kcal/week with an apparent optimal level of 3500 kcal/week.<sup>5</sup> Another important finding of this study was that the benefits gained were associated with current activity and not previous athleticism.

After twenty years of follow-up, the US Railroad Study noted that CHD death rates were 28% less for the most active subjects (expending 3632 kcal/week).<sup>6</sup> The most noticeable reductions in CHD death rates were seen in those workers who expended at least 1000 kcal/week when compared to the most sedentary workers.<sup>6</sup>

Seven-year follow-up results of the Multiple Risk Factor Inventory Trial (MRFIT) revealed that moderately active men (234 kcal/day) had 27% fewer

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CHD deaths when compared to the least active group (74 kcal/day).<sup>7</sup>

Similar dose-response relationships have been reported in two studies evaluating aerobic fitness levels and CHD. Figure 1 shows findings from the Aerobics Center in Dallas in which the optimal level of fitness for reduced mortality was proposed to be 9 metabolic equivalents (METs)\* for women and 10 METs for men.<sup>8</sup> This level of fitness was considered to be attainable through brisk walking. Results of the Lipid Research Clinics Mortality Follow-up study revealed that the least fit group of men was nearly three times more likely to die from CHD than the most fit group.<sup>9</sup> The quality of activity necessary to attain the most fit level was estimated to require moderate aerobic training.

### Exercise Effects on Lipids

It is well established that elevated total cholesterol (TC) and low density lipoprotein cholesterol (LDL-C)

levels, and low high-density lipoprotein cholesterol (HDL-C) levels are linked with atherosclerosis and CHD. Exercise training has favorable effects on a wide range of lipid profiles, including low to moderate-risk profiles in otherwise healthy adults. The preeminent effect of exercise is a significantly increased HDL-C (particularly the HDL<sub>2</sub> subfraction) and a reduced TC/HDL-C ratio.<sup>10,11</sup> Cross-sectional studies reveal that triglycerides, very low-density lipoprotein cholesterol (VLDL-C), and LDL-C are generally reduced in aerobically trained subjects when compared to sedentary controls.<sup>12</sup> Total cholesterol may be reduced but results have been equivocal. In addition, exercise may also serve as a useful part of a comprehensive intervention aimed at reversing existing atherosclerosis.<sup>13,14</sup>

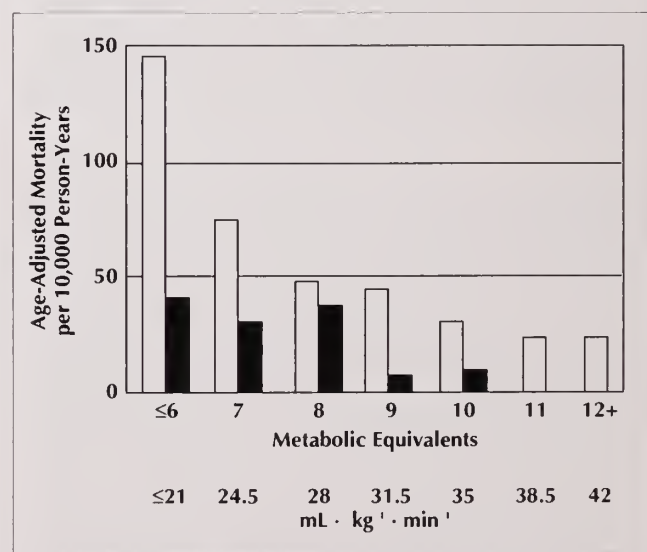
A recent meta analysis of 95 studies by Tran and Weltman examined the effect of exercise training on serum lipids.<sup>15</sup> Their analysis revealed that exercise resulted in reductions of TC by 6.3%, LDL-C by 10.1%, increases in HDL-C by 4.9%, and TC/HDL-C ratio reductions of 13.4%. Similarly, a review by Haskell concluded that LDL-C reductions of 5% to 10% and HDL-C increases of 5% to 15% could be expected from exercise training.<sup>12</sup> Tran and Weltman also concluded that lipid improvements were augmented when weight loss accompanied the exercise training. Conversely, exercise could not completely

\*One metabolic equivalent equals 3.5 mL oxygen/kg/min and is the amount of energy expended at rest.

**Table 1. Biological Mechanisms By Which Exercise Might Contribute to Primary Prevention of Coronary Heart Disease**

1. Maintain or increase myocardial oxygen supply—  
 Delay progression of coronary atherosclerosis:  
 Improve lipid profile  
 Improve carbohydrate metabolism  
 Decrease platelet aggregation and increase fibrinolysis  
 Increase coronary collateral vascularization (unlikely)  
 Increase coronary blood flow or distribution (unlikely)
2. Decrease myocardial work and oxygen demand—  
 Decrease heart rate at rest and during submax exercise  
 Decrease systolic BP and MAP during submax exercise and rest  
 Decrease cardiac output during submax exercise  
 Decrease circulating plasma catecholamines (decreased symp. tone) at rest and during submax exercise  
 Decreased adiposity
3. Increase myocardial function—  
 Increase stroke volume at rest and submax exercise  
 Increase ejection fraction at rest and submax exercise  
 Increase intrinsic myocardial contractility (unlikely)  
 Increase myocardial function due to decreased afterload  
 Increase myocardial hypertrophy but may not reduce CHD risk
4. Increase electrical stability of myocardium—  
 Decrease regional ischemia at rest or submax exercise  
 Decrease catecholamines in myocardium at rest and submax exercise  
 Increase ventricular fibrillation threshold due to reduction of cAMP

From Haskell WL. Overview: Health benefits of exercise. In *Behavioral Health*. Matarazzo (ed.), Chapter 28, 1984. Published with permission.



**Figure 1.** All-cause mortality rates per 10,000 person-years in the Aerobics Center Longitudinal Study. Physical fitness categories are expressed here as maximal metabolic equivalents. The estimated maximal oxygen uptake for each category is also shown. From Blair SN, et al. Physical fitness and all-cause mortality. A prospective study of healthy men and women. *JAMA*. 1989; 262:2395-2401. Published with permission.



offset undesirable changes in serum lipids that accompanied weight gain (presumably fat).

Recent work has also established that improvements in lipid profiles seen with exercise-induced weight loss are independent of those lipid improvements following weight loss from dieting.<sup>16,17</sup> One of these studies evaluated lipid changes following weight loss in men and women on an aerobic exercise program combined with a low-fat, low-cholesterol diet (National Cholesterol Education Program Step 1 diet) versus the diet alone.<sup>17</sup> The results are seen in Figure 2, which shows that aerobic exercise augmented the improved lipid profiles attained through dieting alone. In women, exercise prevented the reduction in HDL-C that was seen in the fat-restricted diet-only group. This is of significance since low HDL-C is a strong CHD risk factor and may be even more so for women.<sup>18,19</sup>

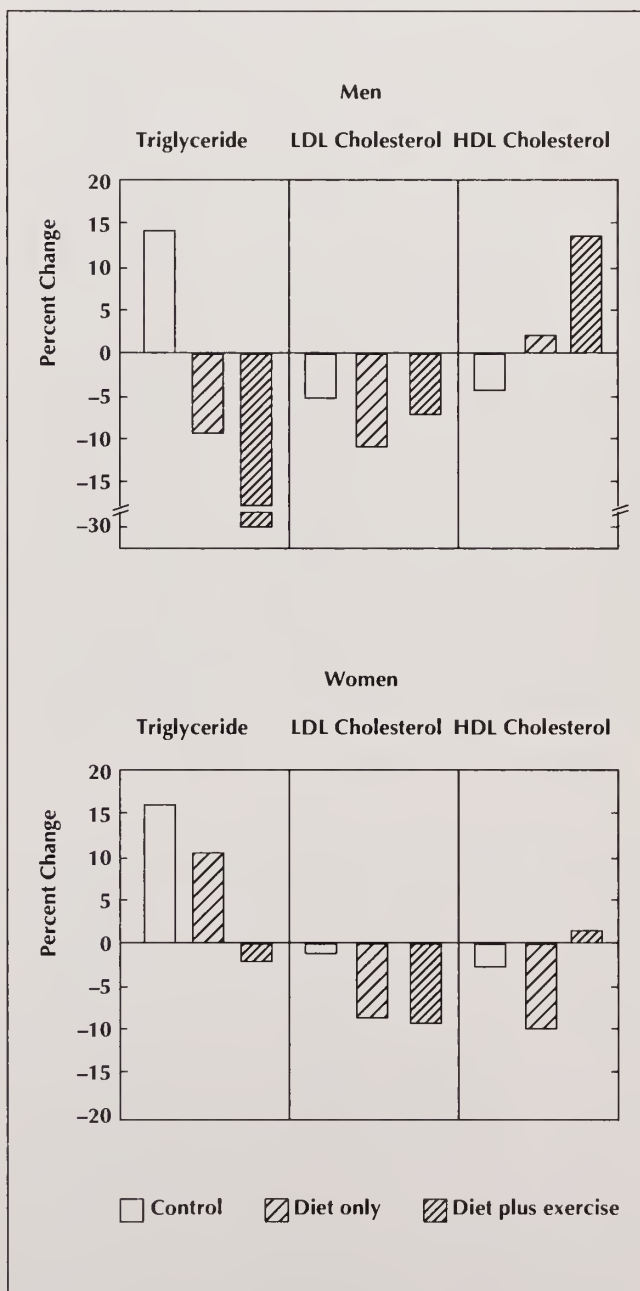
Moderate aerobic activity of 1000 to 1500 kcal/week has been proposed to be the minimal quantity of exercise needed to show antiatherogenic effects with dose-response improvements cited up to 4500 kcal/week.<sup>12,20</sup> The necessary intensity of effort for benefit has not yet been fully determined. Most studies in this area have evaluated the effects of chronic aerobic-level exercise. However, recent studies have found improvements in the form of increased HDL-C and reduced TC/HDL-C ratios with low to moderate level walking.<sup>21-23</sup> One of these was a well designed study which revealed comparable lipid improvements in women walking at either aerobic or non-aerobic strolling levels for 24 weeks.<sup>23</sup> There have been few cross-sectional and prospective studies examining any favorable effects of resistive training on lipid profiles. There have been equivocal findings with regard to triglycerides, VLDL-C, LDL-C, HDL-C, and total cholesterol. Favorable effects may be dependent on baseline values and gender.<sup>11,24</sup>

## Exercise and Hypertension

Hypertension is another major CHD risk factor. As many as 58 million Americans may have high blood pressure or are taking antihypertensive medication.<sup>25</sup> Cross sectional studies have shown a reduced likelihood to develop hypertension in more active individuals.<sup>26,27</sup> The effect of regular endurance exercise in those with existing hypertension has also been examined. A recent meta analysis of 25 studies showed that chronic exercise resulted in decreases of 10.8 mmHg in systolic pressure and 8.2 mmHg in diastolic pressure.<sup>28</sup> An extensive review by Tipton concluded that exercise training was associated with 5 mmHg to

25 mmHg reductions in systolic pressure and 3 mmHg to 15 mmHg decline in diastolic readings.<sup>29</sup>

Recent randomized, controlled studies have also confirmed these antihypertensive benefits of regular exercise.<sup>30-34</sup> One of these showed significant reduc-



**Figure 2.** Percent of baseline changes in plasma triglyceride and lipoprotein cholesterol concentrations in the study groups after one year. From Wood, PD, et al. The effects on plasma lipoproteins of a prudent weight-reducing diet, with or without exercise, in overweight men and women. *N Engl J Med.* 1991; 325:461-466. Published with permission.

tions of systolic and diastolic pressure in normo- and hyperadrenergic adult white men following a 16-week walking or jogging aerobic exercise program.<sup>30</sup> Another found systolic and diastolic reductions in men with untreated mild hypertension after 10 weeks of moderate aerobic walking, jogging, and/or stationary cycling.<sup>31</sup> Blumenthal et al found similar reductions in systolic and diastolic pressures in aerobically trained, circuit weight-trained, and hypertensive controls after four months, but it was noted that those with the greatest improvement in aerobic capacity had nearly twice the reduction in diastolic pressure when compared to those with the lowest fitness improvements.<sup>32</sup> One recent report suggests that exercise is comparable to medication in reducing systolic and diastolic blood pressures to desirable levels in mildly hypertensive men.<sup>35</sup>

Most exercise training studies designed for reducing high blood pressure have involved aerobic-level exertion. Whereas mild or moderate-level aerobic activity has been shown to be efficacious, there are indications that high-intensity aerobic training programs may be less effective.<sup>28,29</sup> Some individuals who exhibit an exaggerated blood pressure to exercise testing (eg, 230 mmHg systolic or 110 mmHg diastolic) or who have left ventricular hypertrophy may not show benefit from exercise training and should be monitored more closely.<sup>29</sup> Traditionally, weight lifting has been discouraged for persons with hypertension due to the extreme pressor effect and levels of blood pressure that can be found in such programs.<sup>36</sup> However, weight training programs have been found to decrease blood pressure in young adults and adolescents.<sup>37,38</sup> Following his review, Tipton concluded that properly supervised resistance training at a level of 30% to 50% maximum voluntary contraction (MVC), such as might be instituted in a circuit weight training program, might be an effective option.<sup>29</sup>

### Exercise and Obesity

Fatness and obesity are often expressed in terms of percent body fat. A percent body fat over 16% for men and 25% for women is considered overfat; over 25% and 30% for men and women respectively is considered to be obese.<sup>2</sup> The distri-

bution of body fat has also come under examination. In both sexes, the typical "male" pattern of fat distribution that locates itself around the abdomen or torso (like an "apple") is associated with greater CHD risk than the distribution typically associated with women (centered in the hips, or the "pear" distribution). From these findings it has been suggested that optimal waist to hip ratios (WHR) are 1.0 for men and 0.8 for women.<sup>39</sup>

Obesity and overfatness constitute a major health problem in the United States. It has been estimated that 10 to 50 million Americans are overfat or obese.<sup>40</sup> The Framingham studies have clearly established obesity as an independent risk factor for CHD, and it is well known that inactivity is a major cause of obesity.<sup>41</sup> The association between caloric output and fat loss is undeniably one of the strongest with regard to the benefits of physical activity. In the revised position stand entitled "The Recommended Quantity and Quality of Exercise for Developing and Maintaining Cardiorespiratory and Muscular Fitness in Healthy Adults," the American College of Sports Medicine (ACSM) has established a threshold of endurance activity of at least 20 minutes at a level sufficient to expend 300 kcal per session at least 3 times a week to demonstrate significant fat weight loss.<sup>42</sup> Traditional weight training has not been found to be useful in weight reduction programs, although circuit weight training programs have been shown to reduce body fat modestly.<sup>43</sup> Figure 3 illustrates the

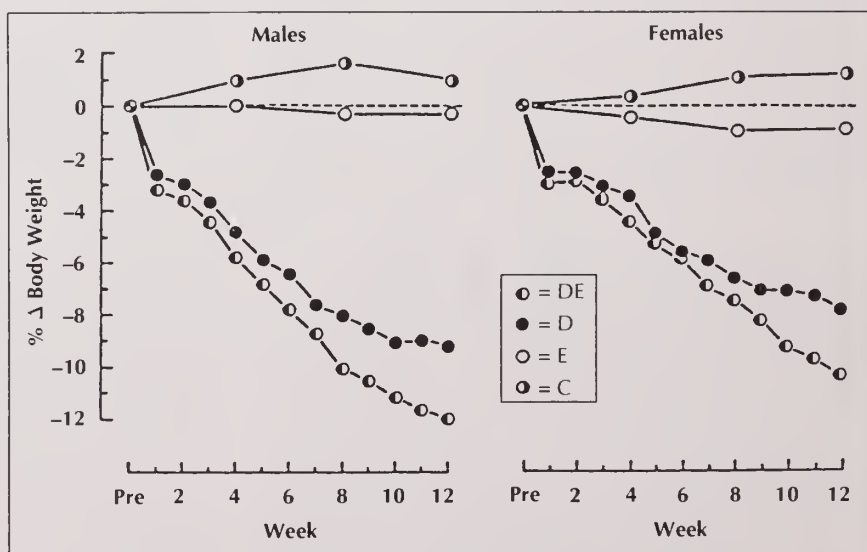


Figure 3. Percent changes in body weight in males and females according to treatment effects of diet and exercise (DE), diet (D), exercise (E), and control (C). From Hagan RD, et al. The effects of aerobic conditioning and/or caloric restriction in overweight men and women. *Med Sci Sports Exerc.* 1985; 18:87-94. Published with permission.



finding that the combination of an exercise program and diet will result in greater reductions of percent body fat than either diet or exercise alone.<sup>44</sup>

The Behavior of Exercise

Exercise is a life-style. Unfortunately, current statistics reveal that it is not a widely held behavior. At any given time about 40% of the US adult population is sedentary, and up to 50% of participants of supervised exercise programs drop out within the first year.<sup>45,46</sup> Other data report that 59% of adult Americans are not getting the necessary level of physical activity for cardiorespiratory benefit. When compared to the 36% of Americans with systolic blood pressure >140 mmHg, the 25% to 40% with cholesterol levels >200 mg/dl, and the 30% of Americans who smoke, physical inactivity emerges as the largest public health CHD risk factor.<sup>47</sup>

As with dieting, behavioral factors may represent the greatest challenge to success. These issues cannot be underestimated and must be addressed on both individual and community levels to promote the initiation and maintenance of healthful exercise behavior.<sup>48,49</sup> People need to have the necessary beliefs, attitudes, and self-efficacy to initiate an exercise program. Time for exercise must be available away from work and family responsibilities, and facilities need to be accessible and affordable.<sup>50</sup> Some individuals need external controls such as rewards and contracts; others will do better with heightened internal controls. The social support of families, friends, and co-workers is also critical for many people.<sup>51</sup> On a community level, physicians need to be active in efforts to promote exercise at all levels. There is recent evidence of uncomplicated community intervention efforts improving fitness levels and reducing other cardiovascular disease risk factors.<sup>52,53</sup> Excel-

lent references are available for the reader who wishes to explore these issues in more detail.<sup>46,54</sup>

Discussion and Recommendations

In 1978 the American College of Sports Medicine published its original position stand, "The Recommended Quantity and Quality of Exercise for Developing and Maintaining Cardiorespiratory Fitness in Healthy Adults."<sup>56</sup> It was from this publication that the often quoted guidelines for aerobic fitness were established: 3 to 5 days/week for 15 to 60 minutes duration, at an intensity of 60% to 90% of maximum heart rate. This was mistakenly interpreted by many as the level necessary for health benefits. Since that time the ACSM position stand has been revised, and much has been done in trying to elucidate the quantity and quality of exercise that will promote health versus that which promotes aerobic fitness.<sup>55-57</sup>

Table 2 classifies varying intensities of aerobic exercise. One's maximum heart rate is derived either from a maximal exercise test or can be estimated by the formula 220-age. Figure 4 illustrates a commonly used rating of perceived exertion scale in which the patient subjectively rates the degree of effort during exercise.<sup>58</sup> This scale has been shown to be reliable and is a useful self-monitoring technique in both untrained subjects and trained athletes. It is particularly useful for patients in which heart rate monitoring is not practical or for those individuals on beta blocker therapy.

Based on the material reviewed here, the follow-

Table 2. Classification of Intensity of Exercise Based on 20-60 Min. of Endurance Training			
Relative Intensity (%)		Rating of Perceived Exertion	Classification of Intensity
HRmax*	VO <sub>2max</sub> *or HR <sub>max</sub> reserve		
<35%	<30%	<10	Very light
35-59%	30-49%	10-11	Light
60-79%	50-74%	12-13	Moderate (Somewhat hard)
80-89%	75-84%	14-16	Heavy
≥90%	≥85%	>16	Very heavy

From Pollack ML and Wilmore JH. *Exercise in Health and Disease: Evaluation and Prescription for Prevention and Rehabilitation*, 2nd Ed. Philadelphia: WB Saunders, 1990. Published with permission.

Rating of Perceived Exertion	
6	
7	Very, very light
8	
9	Very light
10	
11	Fairly light
12	
13	Somewhat hard
14	
15	Hard
16	
17	Very hard
18	
19	Very, very hard
20	

Figure 4. Rating of Perceived Exertion developed by Borg. From Borg GA, Noble BJ. Perceived exertion. *ESSR*.1974; 2:131-153. Published with permission.



ing recommendations can be made for adults interested in reducing their risk for CHD:

1. An exact "threshold" level of exercise necessary to reduce CHD morbidity and mortality has not been established, but any regular physical activity is better than none. Mild to moderate aerobic exercise is better than lighter nonaerobic activity, but high intensity training will not necessarily produce additional *health* benefits.

2. The overall "model" exercise program would be 3 to 5 nonconsecutive days/week of aerobic activity at a moderate intensity (Table 2) for 20 to 60 minutes per session. This amount of expenditure would be approximately equivalent to 10 to 15 miles/week of brisk walking or jogging, 30 to 50 miles/week of outdoor cycling, 3 to 5 miles/week of swimming, or an equivalent time devoted to other comparable endurance activity (eg, stationary cycling, hiking, dance, stair climbing, rowing, cross-country skiing, vigorous sports). Excellent references are available to guide clinicians in the appropriate evaluation process before patients initiate an exercise program.<sup>59,60</sup>

3. For most sedentary adults a moderate level can be achieved through brisk walking (eg, 4 mph or 15 minutes/mile). Individuals should increase the *duration* of their activity first, and once the desired duration is attained the intensity can be increased incrementally. As their conditioning level improves, or for others starting at a higher fitness level, the activity will have to become more vigorous (eg, jogging) to stay at the desired level of effort.

4. Lighter nonaerobic activity (eg, golf, gardening, leisure walking) may need to be conducted more frequently, for longer durations, and for a more prolonged period of time to be of comparable benefit (eg, 45 minutes to greater than one hour, 4 to 6 days/week, sustained for a period of many months to years). A moderate resistance training program (~50% MVC) such as might be part of a circuit weight training program, would also be a healthful addition.

5. Although few jobs meet the criteria, occupational activity may be effective if, by definition, it requires continual walking, climbing of stairs or inclines, lifting loads greater than or equal to 20 pounds each hour, or carrying loads of any size throughout the day.<sup>60</sup>

6. If the main therapeutic goal is a more cardioprotective lipid profile, patients can be informed that current evidence supports both aerobic-level exercise and light walking as being effective. LDL-C reductions of 10%, HDL-C increases of 5% to 15%, and substantial decreases in the TC/HDL ratio

would be reasonable expectations. A minimum caloric expenditure of 1000 to 1500 kcal (eg, 10 to 15 miles of walking or jogging) a week for at least several months is recommended, and a dose-response effect can be expected up to about 4500 kcal (eg, 45 miles) per week. Regular exercise should be prescribed for patients following fat-restricted diets to magnify antiatherogenic lipid changes while offsetting possible deleterious reductions in HDL-C. Support for antiatherogenic benefits from resistance training have been lacking.

7. With regard to hypertension, moderate *aerobic* exercise on a regular basis may be all that is necessary to control mild hypertension and may keep medication therapy to a minimum. Long-term nonaerobic activity may be of benefit if concomitant weight loss occurs, and a moderate resistance training program can also be safely recommended. A high-level aerobic or resistance training program is not recommended due to the lack of beneficial results seen with training at this intensity. Patients with exaggerated blood pressure responses to exercise or left ventricular hypertrophy should be evaluated individually for their potential to benefit from an exercise program.

8. When fat reduction is the major goal, total caloric expenditure is more important than the strict type of the exercise program. A minimum of 200 to 300 kcal per session, 4 to 3 times/week, respectively, is recommended. This level of effort would be equivalent to approximately 3 miles of jogging or brisk walking, 10 to 12 miles of outdoor cycling, 2 to 3 miles of swimming, or about 30 to 45 minutes of other comparable aerobic activity. Exercise programs of greater frequency or duration will result in greater changes in body composition. Traditional resistance training will be of little benefit in this regard but a circuit weight training program may be a helpful addition to aerobic exercise.

9. Exercise is better than dieting alone for fat reduction since lean body mass will be maintained or promoted with exercise. Furthermore, less severe reductions in caloric intake or less total caloric expenditure will be necessary to achieve an individual's goal.

10. Motivating currently sedentary individuals to start, and continue, any regular physical activity is the most important step toward demonstrating the efficacy of exercise in reducing coronary heart disease. For all patients, the physician needs to give recognition to the variables that influence patients' ability to initiate and maintain an exercise program.

The physician should help foster appropriate attitudes and goals, and tailor the exercise prescription accordingly. The physician should provide necessary external reinforcements (eg, discounts to services, financial rebates, praise, T-shirts) while fostering the development of internal reinforcers (positive self-talk, improved body image and health, self-esteem, and self-efficacy). The physician should be an advocate within the community to promote exercise as a life-style and above all, the physician should be a role model and engage in regular exercise for himself or herself.

## Conclusions

This paper has attempted to present the available evidence for the nature of exercise that is effective in reducing coronary heart disease morbidity and mortality, and for the management of the three CHD risk factors of atherogenic serum lipids, hypertension, and obesity. Significant dose-response benefit can be expected from light nonaerobic to moderately aerobic exercise. Moderate-level aerobic activity is likely to be of particular benefit for those patients with mild hypertension. Moderate resistance training may also be a useful addition to an exercise program. Individual and societal factors having influence on the initiation and maintenance of exercise behavior must be addressed with patients before an impact on their cardiovascular health status can be expected. □

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#### The Author

Kenneth M. Leclerc is a third-year medical student at the University of Oklahoma College of Medicine in Oklahoma City. He has an MEd in exercise physiology, earned at the University of Texas in 1985.



# Movement Is Medicine

Donald L. Cooper, MD

A subcommittee of physicians serving the President's Council on Physical Fitness and Sports has developed a "universal exercise prescription."

In 1989 when Arnold Schwarzenegger was appointed chairman of the President's Council on Physical Fitness and Sports (PCPFS) by President Bush, a project to develop an exercise prescription blank for physicians was presented to him. He felt it was a step in the right direction and appointed Dr Donald L. Cooper of Oklahoma State University, chairman of a subcommittee of the physicians serving on the council, to develop a more or less universal exercise prescription that could be brought to the attention of all the physicians in America. The other two physicians on the council besides Dr Cooper are Dr Cory SerVass of Indianapolis, Ind, and Dr Sammy Lee of Huntington Beach, Calif. Dr Nick DiNubile of Philadelphia, Pa, and Mrs Chris Spain of the PCPFS home office acted as spe-

cial advisors to the council on this important project.

This concept fit in very well with the Department of Health and Human Services initiative called "Healthy People 2000."<sup>1</sup> The main objective of "Healthy People 2000" is to reduce preventable death, disease, and disability through better health practices.

Listed as one of the highest priorities is the promotion of regular physical activity and exercise for all our citizens. All physicians need to recognize and act on the fact that the human body is designed for activity. The old saying, "If you don't use it, you lose it" is really true, and sedentary life-style is not conducive to good health at any age. It is hoped that all physicians will become actively involved in recognizing the leadership role they can play in their respective communities. They need to emphasize to all of their patients the important role of exercise in preventing illness and disability. The quality of life for families can certainly be enhanced by playing, being active, and exercising together. A truth that needs to be

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Figure 1.

Direct correspondence to Donald L. Cooper, Director Athletic Medicine, Oklahoma State University, 1202 West Farm Road, Stillwater, OK 74078-0625.

promoted by all of us is that play, recreation, and exercise are necessary ingredients in the diet of all human beings. The "Work-aholic" philosophy does not necessarily make for a good life. From pediatrics to geriatrics, play, recreation, and exercise must be recognized for the positive values they can provide for a healthier, happier, and more complete person. Eric Hoffer, the late, great longshoreman philosopher, stated that "play" may be man's most "useful occupation."

In longitudinal studies it has been shown that even low-intensity exercise can provide health protection. The earlier belief that one had to be maximally fit to reap

the benefits of exercise has been shown not to be true. That often heard saying where people are working out, "No pain, no gain," also is not correct. The best form of exercise for most people is walking. We must recognize that brisk walking done for a continuous period of at least 30 minutes three times a week can be of benefit to the general health of anyone. In brisk walking, every muscle in the body is activated, used, and benefited.

Physicians need to recognize that they can be very influential in their patients' lives, and by their own personal example can serve as role models for their entire community. All physicians should be

supportive of the concept that any activity is better than no activity. Another important point to remember is that those who sit risk far more than those who are active. The human body is the only machine that will break down more rapidly from the lack of being used. There is great psychologic benefit from being more active. "Action absorbs anxiety" is a valid statement. Physical activity has been shown to help in lifting depression in any age group and in improving the mental functioning and well-being in our elderly population.

Physicians should encourage all patients to make physical activity a regular part of their lives and to do it daily, like brushing their

## *Rx*: EXERCISE

Regular exercise has been shown to be effective in the prevention and treatment of a wide variety of medical conditions, including coronary heart disease, high blood pressure, osteoporosis, diabetes, arthritis, certain forms of cancer, anxiety, and depression.

To achieve health and fitness, the President's Council on Physical Fitness and Sports supports the recommendations of the American College of Sports Medicine, which combine three elements for a balanced fitness program.

1. **Aerobic fitness**—for weight management and a healthier heart and lungs
2. **Muscle strength**—for stronger muscles and bones
3. **Flexibility**—for a full range of body motion and injury prevention

With regular exercise you will look, feel, think, and sleep better. You will even feel better about yourself! All exercise, no matter what your age or physical ability, is excellent medicine at practically no cost.

I am giving you an exercise prescription and urge you to start today. I will be happy to monitor your progress with you and help you in any way I can. Good luck, and have fun!

Figure 2.

## *Rx*: EXERCISE

### Three-Part Plan for Your Physical Fitness

#### 1. Exercise for Aerobic Fitness

Aerobic-type exercise and activities improve the function and efficiency of your heart, lungs, and blood vessels. Start off with short workouts, and then gradually progress to 20 or 30 minutes three to five times a week. Try a variety of activities such as walking, jogging, swimming, biking, and tennis.

#### 2. Exercise for Muscle Strength and Endurance

Using resistance builds muscle tone and strength, helps improve posture, and makes muscles and bones more resistant to injury. Keep your movements slow and controlled, and train only every other day or twice a week. Calisthenics, such as push-ups, sit-ups, or moderate weight lifting, builds strength and muscle endurance.

#### 3. Exercise for Flexibility

Proper stretching every day reduces the chance of muscle strain and injury. Move body joints through a full range of motion, gently and slowly stretching each muscle group. Hold each stretch until you feel a slight pulling sensation, but not pain. Breathe comfortably, holding the stretch for 15 to 20 seconds. Repeat several times.

Figure 3.

## *Rx*: EXERCISE

### Handy Habits

Check the things you can do right away. Make these simple tasks part of your daily life, like combing your hair or brushing your teeth.

- ☐ Use a rocking chair instead of a regular chair.
- ☐ Find something you like to do that involves repetitious movement.
- ☐ Avoid elevators and climb the stairs.
- ☐ Park in the farthest part of the parking lot and walk to your destination.
- ☐ Breathe deeply and forcefully several times a day to aerate your entire lung.
- ☐ Go dancing, particularly square dancing, for fun and good exercise for all ages.

### Start-up Hints

- Take your exercise prescription regularly three to five times a week.
- Pick a partner or exercise buddy and stay motivated.
- Plan ahead and set aside a regular exercise time.
- Keep track of your exercise program and be proud of yourself every day that you do it!
- Update your friends and family on your successes.
- Train, don't strain. Start slowly and gradually build up.
- Watch your diet and eat wisely.

Figure 4.

teeth or combing their hair. Today, too many people are conscious only of their hair, face, or their clothes, and they think very little about the body and mind underneath. Americans spend billions of dollars yearly on their skin, hair, clothes, and superficial things, but little or no time on conditioning and maintaining the bodies and mentalities underneath the surface.

The kind and amount of physical exercise will vary from person

to person depending on age, state of health, occupation, and present condition, but we believe there is room for improvement with most of us.

A physician's job is to help people die young as late as possible. Exercise is a primary ingredient in reaching this goal. By making exercise a habit, one can enjoy the benefits of better health and happiness every day of one's life.

In supporting this concept of more exercise for more Americans, the President's Council on Physical Fitness and Sports developed the Presidential Sports Award in 1972.

There are now 58 sports and fitness activities one can participate in to earn this award. It is primarily designed for the adult population, but anyone 10 years or older can participate. To get a fitness recording log to participate, one can write directly to the President's Council on Physical Fitness and Sports at 701 Pennsylvania Avenue, Washington, DC 20004, or write to Presidential Sports Award, PO Box 68207, Indianapolis, IN 46268. The program is being administered for the Council by the AAU, located in Indianapolis.

The exercise prescription has been developed with an explanatory folder and printed as a public

service project of the Wyeth-Ayerst Laboratories (Figs 1-6). It will be distributed to physicians throughout America by the Wyeth-Ayerst drug representatives that call on physicians in the communities of the United States.

It is never too late to think about getting an exercise history and to remind all our patients that "movement is medicine." It is important to remember that prevention is still the best program for ourselves and our patients, for one day we will all be patients, every single doctor and every single human being.

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The Author

Donald L. Cooper, MD, is director, Athletic Medicine, and team physician at Oklahoma State University, Stillwater. He is a visiting lecturer, Orthopedic Department, University of Oklahoma College of Medicine, and served as team physician to the US Olympic Team in Mexico City.

Today's Date _____	Goal Date _____
How I am now	How I am on goal date
My measurements _____	_____
My resting heartbeat _____	_____
My cholesterol level _____	_____
My weight _____	_____

Figure 5.

**President's Council on Physical Fitness and Sports** Date: \_\_\_\_\_

 **EXERCISE**

In the interest of better personal fitness, general health, and disease prevention, I prescribe the following exercise

Name: \_\_\_\_\_

Address: \_\_\_\_\_

**Rx Aerobic**

- ☐ Walking/hiking 30 minutes
- ☐ Easy jogging two miles
- ☐ Swimming or water exercise 20 minutes (continuous)
- ☐ Bike riding 20 minutes (moderate speed)

**Muscle Strength**

- ☐ Weight training three sets, ten repetitions
- ☐ Calisthenics Push-ups and sit-ups

**Flexibility**

- ☐ Stretching

X \_\_\_\_\_ per week

\_\_\_\_\_ M.D. \_\_\_\_\_ M.D.

Substitution Permitted Dispense as Written

Refill/Report-Back Date: \_\_\_\_\_

Figure 6.



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## Students vote Aesculapian Awards to several association members

Several members of the Oklahoma State Medical Association (OSMA) affiliated with the University of Oklahoma Health Sciences Center recently were named winners of Aesculapian Awards. The awards are presented by students in the OU College of Medicine, and honor academicians for outstanding contributions to and excellence in teaching for the past year.

In addition to the Aesculapian Award winners, Gordon Deckert, MD, David Ross Boyd Professor in the Department of Psychiatry and Behavioral Sciences, Oklahoma City, was presented with the W. Young Lifetime Achievement Award.

Aesculapian Award winners in Oklahoma City are Alan Hollingsworth, MD, assistant professor of surgery (named by Class of 1992) and Deborah McCollum, MD, fourth-year general surgery resident (named by Class of 1993).

Also, instructors at the OU College of Medicine - Tulsa were presented awards. Winners included B. Bhushan Sharma, MD, associate professor of pediatrics, and Richard Marshall, MD, clinical professor of medicine (both named by Class of 1992); and Charles King, MD, resident, Department of Medicine (named by Class of 1993). □

## Some of America's best physicians practice in Oklahoma, book says

Several members of the Oklahoma State Medical Association (OSMA) have been included in *The Best Doctors in America*, a new book published by Woodward/White, Inc. of Aiken, SC.

Among those named are Mark A. Everett, MD; Bradley K. Farris, MD; James Little, MD; Jesus E. Medina, MD; Betty Pfefferbaum, MD; Dennis Weigand, MD; J. Gail Neely, MD; and B. Hill Britton, MD.

The book is based on an intensive, year-long survey involving more than 11,000 telephone calls and 7,000 letters to health care professionals nationwide. The directory includes 3,850 physicians in more than 350 medical specialties—only slightly more than 1% of the nation's 350,000 practicing physicians, said the book's authors, Steven Naifeh and Gregory W. Smith.

Dr Everett, Oklahoma City, received his MD degree from the OU College of Medicine in 1951. The author of more than 150 publications, he became chairman of the OU Department of Dermatology in 1965, and is currently a Regents' Professor.

Dr Farris, Edmond, received his MD degree in 1980 from OU. He is now an associate professor of ophthalmology and adjunct assistant professor neurology and neurosurgery.

Dr Little, Oklahoma City, also is a graduate of the OU, receiving his MD in 1962. A member and officer in numerous professional organizations, he is in private practice in addition to being adjunct assistant professor of ophthalmology at OUHSC.

An expert in head and neck surgery, Dr Medina, Edmond, was appointed chairman of the OUHSC Department of Otorhinolaryngology in 1991. He earned his degree from the San Agustin School of Medicine at National University in Arequipa, Peru.

Dr Pfefferbaum, Norman, is a nationally recognized child psychiatrist. She earned a degree from the University of California School of Medicine, San Francisco, in 1972 and is currently completing her second year of law school at the University of Oklahoma.

Edmond resident Dr Weigand received his medical degree from OU in 1963. He is a professor of dermatology at OUHSC.

Dr Neely, Oklahoma City, a 1965 OU graduate, is former chair of the OUHSC Department of Otorhinolaryngology. Dr Britton, formerly an associate professor in the same department, earned his medical degree at the university in 1960. □

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## Male? Mentally stressed? Your cholesterol level might be going up...

Acute mental stress can effect a man's cholesterol level, according to a study published in the April issue of the AMA's *Archives of Internal Medicine*.

"Acute mental stress can produce rapid elevations in serum cholesterol concentration," writes Matthew F. Muldoon, MD, from the Center for Clinical Pharmacology, University of Pittsburgh School of Medicine, with colleagues.

The study compared the effects of acute mental stress and postural change (prolonged standing) on serum cholesterol concentrations. Twenty-six men were studied. They were 18 to 30 years of age, had normal blood pressure and were nonobese. The men attended two 80-minute laboratory sessions consisting of 30 minutes of baseline, 20 minutes of a task (one designed to induce mental stress by word and math tests, the other standing for the duration), and 30 minutes of recovery.

Cholesterol concentration was measured once during the baseline and recovery periods and during the 3rd and 18th minute of the task period.

"Both mental and orthostatic tasks...significantly increased serum cholesterol concentration (by 3.7 and 21.9 milligrams per deciliter of blood), respectively," they write. "Cholesterol levels with standing were reversible, while those resulting from mental stress persisted through the recovery period."

The authors caution, however, "the present experiment concerned only acute mental stress, and the effects of acute and chronic stress on both serum lipid levels and atherosclerosis may differ."

They add that "increases in serum cholesterol level after acute mental stress are analogous to those with standing and may reflect hemoconcentration rather than altered lipoprotein metabolism." □

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## The Cervical Papanicolaou Smear: Bacterial Infection and the Bethesda System

*To the Editors:* The Bethesda System for the reporting of cervicovaginal cytologic diagnoses<sup>4</sup> recognizes the importance of including infections (bacterial, protozoan and viral) within the "descriptive diagnoses" component of the report. It replaces the old system for reporting bacterial infections with terminology more consistent with modern concepts of infectious diseases of the female genital tract. The inappropriate distinction between the diagnosis of *Gardnerella vaginalis* and the confusing and microbiologically invalid "coccoid bacteria" has been eliminated, and the uninformative "mixed flora" has also been discarded. In short, the Bethesda System is a great step forward in improving Papanicolaou test reporting of bacterial infections.

Nevertheless, we do not agree with the expression "microbiological organisms morphologically consistent with *Gardnerella* spp." Since 1978 there have been two publications<sup>5,8</sup> indicating that anaerobic bacteria (especially species of *Bacteroides*, *Mobiluncus*, peptococci and peptostreptococci), as well

*Related article, page 281.*

as *Gardnerella*, contribute to the clinical entity currently called bacterial vaginosis. Bacterial vaginosis is a polymicrobial syndrome probably resulting from a symbiotic relationship between *Gardnerella* and several types of anaerobic bacteria.<sup>2</sup>

*Mobiluncus* spp have a distinctive, slender, curved shape with tapering ends that can be identified on

wet mount,<sup>10</sup> Gram staining<sup>7</sup> and cervical Papanicolaou smears.<sup>3,6</sup> These organisms can sometimes be seen adhering to epithelial cells, forming "comma cells" (Figure 1).<sup>6</sup> The presence of *Mobiluncus* as part of bacterial vaginosis flora may have therapeutic implications.<sup>9</sup>

We suggest that the Bethesda System substitute the term "microorganisms morphologically consistent with the bacteria of bacterial vaginosis" or "bacterial pattern consistent with bacterial vaginosis," specifying the presence or absence of *Mobiluncus* spp.

—Giuseppe Giacomini, MD

From the Servizio di Anatomia Patologica e Citopatologia, Spedali Riuniti di S. Chiara, I-56100 Pisa, Italy, and

—Vicki J. Schnadig, MD

From the Division of Cytopathology, Department of Pathology, University of Texas Medical Branch, Galveston, Texas 77550.

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(continued)



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**More than \$33,000 collected****Dean of OU medical school thanks OSMA auxiliary for raising funds**

*To the Editor:* My purpose is to thank the [OSMA] auxiliary for their superb efforts on behalf of the students at the College of Medicine. They collected \$33,043.87 (\$29,380.87 Oklahoma City campus and \$3,663.00 Tulsa campus). Only five of the 126 schools in the U.S. received more! That is remarkable, and we are delighted since all of these funds are used to benefit students through scholarships and other financial aids.

Let me especially commend the president of the auxiliary, Susan Paddack, and the chair of the AMA-ERF Committee, K. Caldwell, for their leadership.

On behalf of the faculty and student body of the College of Medicine, THANK YOU, and keep up the great work!

—Edward N. Brandt, Jr., MD, PhD  
Executive Dean, OU College of Medicine

**DEATHS****Francis Patrick Cawley, MD  
1916 - 1992**

Fairview native Francis P. Cawley, MD, died April 17, 1992 in Liberal, Kans. Dr Cawley was a 1944 graduate of the University of Oklahoma School of Medicine and completed his internship in Jersey City, NJ. During World War II he served as an Army surgeon, attaining the rank of captain. After his discharge he moved to Hooker, where he had a general practice for 40 years before his retirement in 1986. Dr Hooker was a Life Member of the OSMA.

**Oliver James Hagg, MD  
1918 - 1992**

Long-time Waurika internist Oliver J. Hagg, MD, died March 31, 1992, after a brief illness. Dr Hagg, a 1943 graduate of St. Louis University School of Medicine, was born in Stoney Ridge, Ohio. He served in the US Army Medical Corps during World War II and opened his practice in Waurika in 1946. He was a consultant for Jefferson County Health Department Family Planning Clinic, house physician at Wood Convalescent Center and, at the time of his death, director of the Jefferson County Health Department.

**Don Horatio O'Donoghue, MD  
1901 - 1992**

OSMA Life Member Don H. O'Donoghue, MD, Oklahoma City, died April 20, 1992. Dr O'Donoghue was graduated from the University of Iowa College of Medicine in 1926 and completed a residency in ortho-

pedics at the University of Oklahoma's University and Crippled Childrens hospitals in Oklahoma City. He was professor and chairman of the Department of Orthopaedic Surgery at the university from 1948 to 1973 and in 1974 was appointed first head of the newly created Division of Sports Medicine. Dr O'Donoghue was nationally known as a pioneer in sports medicine and was a founding member and first president of the American Orthopaedic Society for Sports Medicine.

**Charles Victor Williams II, MD  
1946 - 1992**

C. Victor Williams II, MD, Lawton general practitioner and emergency medicine specialist, died May 1, 1992. A native of Tulsa, Dr Williams completed his undergraduate degree at Stanford University and was graduated from the University of Oklahoma College of Medicine in 1972. He completed his internship at St. Anthony Hospital in Oklahoma City. Dr Williams was a diplomate of the American College of Emergency Physicians. □

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Oklahoma State Department of Health

Health department reports on alcohol and drug-related injuries



Alcohol is a major contributor to injury mortality, contributing to up to two-thirds of adult or boat-related drownings, half of motor vehicle crash deaths, and approximately 40% of deaths from unintentional falls or residential fires. These reports may

be underestimates, as blood alcohol testing is not always done, nor is alcohol or drug data always in the medical record.

Although per capita consumption of alcohol has decreased nationally in recent years, alcohol use is still a major contributor to injury in Oklahoma, far exceeding the reported contribution of drugs. During the first 4 years of data collection by the OSDH Injury Epidemiology Division, 39% of hospitalized traumatic spinal cord and 40% of all fatal traumatic brain injuries among Oklahomans over 14 years of age were alcohol and/or drug related. Such injuries are often water related, especially in the summertime.

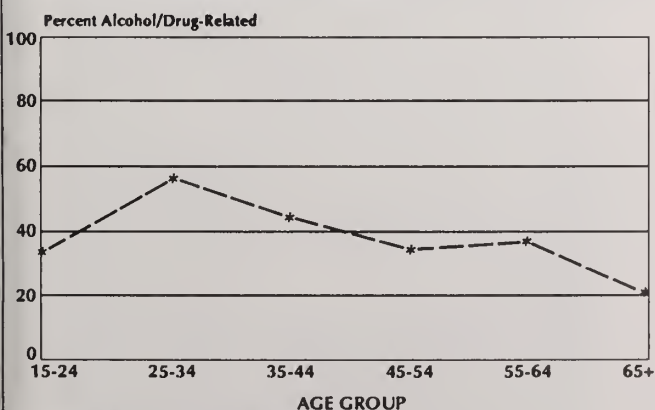
Hospitalized and fatal submersions (near-drownings and drownings) are a particular problem in Oklahoma. From 1988 through 1991, 454 submersion injuries were reported to OSDH, 279 (61%) of which occurred to persons over 14 years of age. Data on the contribution of alcohol and drug use were obtained from the patient history, medical record, or other person to see if the patient or the person causing the injury was known or suspected to be

drinking or using mind-altering drugs the day of the injury.

Alcohol and/or drugs contributed to 39% (110/279) of total injuries and to over half (51%) of injuries among persons 25 to 44 years of age (Fig). Alcohol and/or drugs contributed to 41% of male and 31% of female submersions and was reported significantly more often among Native Americans (65%), compared to blacks (42%), and whites (38%). Over two-thirds of both the diving-related and driving-related submersions were alcohol/drug-related. Submersion injuries were most likely to be alcohol/drug-related during the night and were involved in 78% of such injuries occurring between 4 am and 8 am. No person suffering an alcohol/drug-related submersion wore a personal floatation device (PFD).

These data suggest that during the upcoming summer, prevention efforts should focus on reducing alcohol/drug consumption among persons in or near the water, especially during high-risk activities such as boating, diving, and swimming. Although numerous water safety courses exist, it is more difficult to reduce drinking and risk-taking behavior in young adults; OSDH is piloting a program to reduce risk-taking behavior in adolescents. Initiatives to reduce drinking and driving and increase use of PFD's are

Figure 1. Submersion Injury Alcohol/Drugs as Contributor by Age Group\*, Oklahoma, Nov 87-Dec 91



\*Includes only persons > 14 yrs. of age;

In Memoriam

1991

Edward M. Farris, MD	November 22
Weldon Keiller Haynie, MD	November 25
Samuel Richard Fryer, MD	November 30
William Thomas Snoddy, MD	December 3
Philip George Joseph, MD	December 20
Charles Patrick Kirkland, MD	December 24

1992

John Moore Campbell III, MD	January 24
Bruce Ratliff Hinson, MD	January 24
Louis Carroll Taylor, MD	February 3
Earl Russell Muntz, MD	February 4
Claude Marion Bloss, Jr., MD	February 24
Oliver James Hagg, MD	March 31
Francis Patrick Cawley, MD	April 17
Don Horatio O'Donoghue, MD	April 20



strongly encouraged, but personal counseling of patients may be most effective. Once traumatic injuries are seen, drug/alcohol screening should be considered. Clearly documenting the circumstances of the injury in the medical record helps surveillance of alcohol/drug-related injuries and will guide future prevention projects. Some hospitals already employ E coding (external cause of injury), which makes this data collection even easier. □

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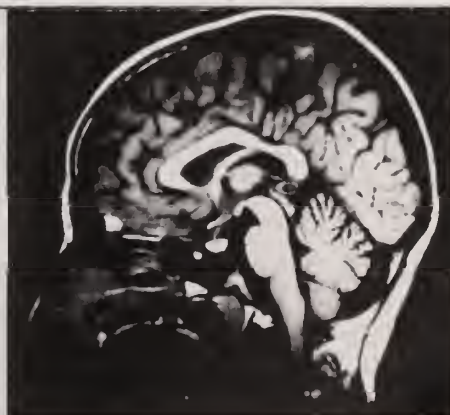


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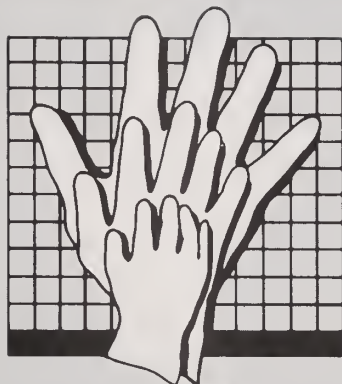
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■ **Antonio C. deLeon, Jr., MD, clinical professor, Department of Internal Medicine, OU College of Medicine—Tulsa, has received a Distinguished Alumnus Award from Georgetown University. The award, presented during a recent meeting of the American Heart Association, is presented by the W. Procter Harvey Cardiology Fellows to a peer for his or her contributions to cardiology.**

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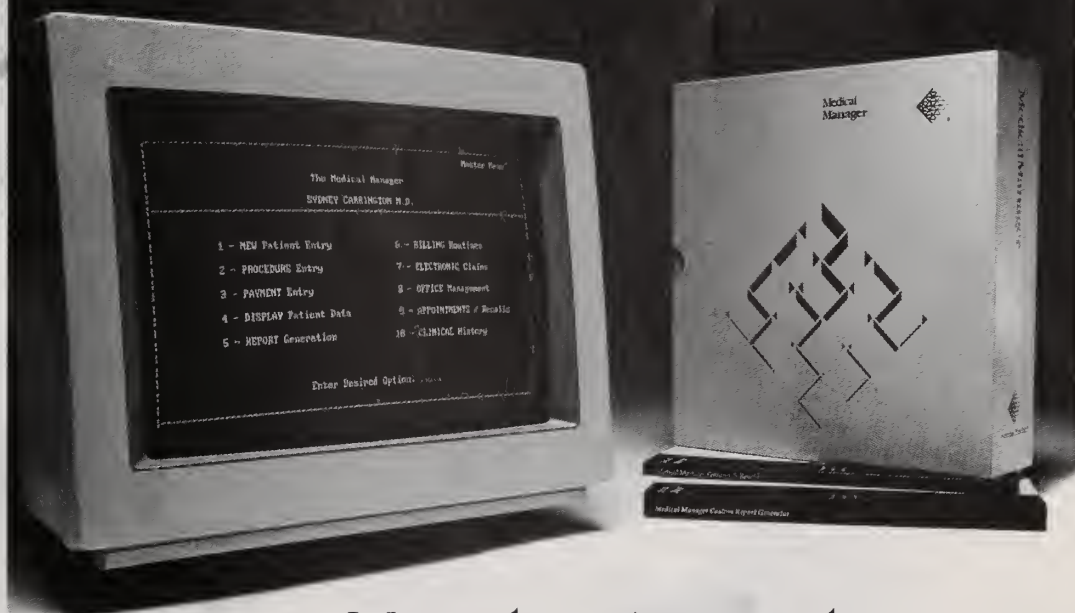
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## Which Ten Commandments?

"Assisting Physicians in Decision-Making" is entirely reprinted in this month's Worth Repeating department and can be usefully pondered by every physician. Reprinted from *Pennsylvania Medicine*, this article by Kelly and Swartwout discusses the development of "practice parameters," as defined by the American Medical Association and now being expanded. In a congruent deployment, in February 1992, an agency of the Public Health Service publicly released "guidelines" on acute pain management. The agency is also soon releasing "guidelines" on the treatment of urinary incontinence, and on the early treatment of pressure ulcers.

So a definite trend is developing in the United States for coterie to write and publicize systems of medical management of specific, circumscribed clinical problems or situations. Recently the American

### Related article on page 334.

Society of Anesthesiologists' recommendations on intraoperative monitoring have had a positive effect on anesthesia accidents, and were recommended to Oklahoma physicians by our Physicians Liability Insurance Company.

However, there are many physicians, aware of the biological variability of patients and diseases and concerned about circumscription of the medical license, who have been reluctant to approve any writ characterized as "cook book medicine." Also, malpractice trials commonly hinge on alleged violations of "standards of medical practice," and thoughtful physicians are understandably leery of unscientific criteria of practice.

In ordinary parlance, "standards" are understood as defining unvarying things, such as weights and measures. The word *parameters* has been pilfered from mathematics, and its medical usage is indefinite; the dictionary defines *parameters* as "any

constant with variable values." "Guidelines" are often thought to be indistinct and perhaps unduly elastic.

From these thoughts, we deduce that the process of defining the physician's proper actions in specific circumstances is sometimes as easy as pie, and at other times nearly impossible, and guideline writers should be wise enough to see the difference. Also, the intellectual credentials of the coterie developing the guideline will affect the acceptance of the criterion by physicians. Whether the guideline can incorporate new medical knowledge and new technology will determine the duration of usefulness of the guideline. Guideline writers with the gift of prophecy will be needed, or the criteria will be useful only briefly.

The mission and agenda of the organization developing the criteria will subtly but inevitably affect the results. We should propose and insist that the correct treatment of the patient and the education of the physician will always be the goal of every guideline. As we have seen the perversion of peer review by the PRO into a discordant tool of fiscal management, so it is possible that practice guidelines could easily be converted into a bureaucratic excuse to find some medical care "*unacceptable for compensation by this agency.*"

It is now likely that parameters, guidelines, standards, or criteria of medical practice will be increasingly documented in the future, and increasingly considered in reimbursement decisions. The medical profession must be active in writing these documents so that medical science and the welfare of the individual patient will be paramount in selecting the criteria. Practice guidelines must not become another tool for the financial control of medical care.

*Ray V. M. Intyre, M.D.*



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## Who says doctors won't volunteer?

The Annual Meeting, in the eyes of this incoming president, was a great success! We expanded the agenda of the Annual Meeting with extra time, and everyone was a little bit more relaxed. From the beginning of the meeting with the Board of Trustees, and on to the House of Delegates, reference committees, annual dinner, and even our humorist, each added a significant contribution to the program. We loaded our AMA delegates going to Chicago with directives and resolutions to take your ideas and desires to the national meeting.



glad to do anything you need, and I will serve on any of the committees or commissions or help to put together programs." I want each of you to know how appreciative I am of these offers. I can also tell you that many of those names have been or will be included in the committees. The staff has also put together a checklist of the items that you directed us to accomplish during the coming year. Many of those directives have already been accomplished; many more will take time and planning to accomplish. Hopefully, by meeting time next year we will be able to say that it is an accomplished feat.

My special thanks go out to Billy Dale Dotter and his wife, Alice, for leaving this association in such great shape!

A handwritten signature in dark ink, reading "James J. Durnell M.D." The signature is written in a cursive style with a large, looping initial "J".

As your president, I was totally overwhelmed by the tremendous support of individual physicians who came to me to help in your medical association. I cannot even begin to estimate the number of individuals who personally came to me and said, "I will be

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# Neonatal Extracorporeal Membrane Oxygenation (ECMO): Its Uses and Limitations

George P. Giacoia, MD

Extracorporeal membrane oxygenation (ECMO) is a type of cardiopulmonary support used on newborns in eminent danger of death. It is used for the treatment of conditions causing hypoxemia and respiratory failure not responsive to conventional therapy, as a temporizing measure in congenital diaphragmatic hernia, and to assist circulation in postcardiotomy ventricular failure following repair of congenital heart disease. This technique is complex, expensive, and labor intensive, and may cause serious complications and sequelae. Undoubtedly, ECMO treatment is associated with a high survival rate. However, the favorable results so far obtained do not justify its indiscriminate use. Criteria for the use of ECMO will require reevaluation as improvements in conventional therapy result in a decrease in mortality and morbidity. A plea is made for maximizing and improving conventional therapy, adherence to a strict criteria for the use of ECMO, and a prospective and comprehensive evaluation of the long-term outcome of ECMO patients. The success of ECMO in newborns has led to its application to support pediatric and adult patients with pulmonary or combined cardiac and pulmonary failure. The use of ECMO in these patients should be considered investigational, and a rigorous research protocol should be followed.

Over the past several years, extracorporeal membrane oxygenation (ECMO) has been used to treat infants with severe neonatal respiratory failure associated with pulmonary hypertension.<sup>1,2</sup> Without

ECMO, this condition has a mortality rate of 80% despite the use of maximal ventilator support and pharmacologic treatment.

Basically, ECMO is prolonged extracorporeal cardiopulmonary bypass achieved most commonly by cannulation of the right atrium via the right internal jugular vein (for blood removal), and cannulation of the aortic arch via the right common carotid artery (for return of oxygenated blood). As with any new, expensive, and potentially dangerous technology, concern has been raised over the consequences of carotid artery and jugular vein ligation, long-term sequelae, and overall morbidity.

This article examines some of these questions, reviews the current knowledge in the subject and summarizes the experience with ECMO at the Eastern Oklahoma Perinatal Center at Saint Francis Hospital.

## Patient Selection Criteria

The major indication for ECMO is potentially reversible acute respiratory failure unresponsive to maximal ventilator and pharmacology manipulations. ECMO has also been used in infants and children for cardiovascular support in the treatment of intractable low cardiac output syndrome following repair of congenital heart disease.<sup>3</sup>

The requirement for systemic heparinization limits the application of this technique to patients without bleeding tendencies or at risk for intracranial hemorrhage. Hence, premature infants of less than 34 weeks are excluded.<sup>4</sup>

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Conditions leading to reversible acute respiratory failure in the neonatal period include meconium aspiration syndrome, persistent pulmonary hypertension of the newborn, respiratory distress syndrome, sepsis, and congenital diaphragmatic hernia.

Table 1 summarizes the criteria for using ECMO in neonates. The most important selection criteria is the use of an index of acute reversible respiratory failure that predicts high mortality. Although an alveolar to arterial oxygen gradient greater than 620 mmHg for 12 hours has been proposed,<sup>5</sup> most centers use the oxygenation index (Table 2). A predicted mortality of 80% or greater is determined by the retrospective analysis of local neonatal population data.

In congenital diaphragmatic hernia (CHD), it is not feasible to distinguish between persistent fetal circulation and pulmonary hypoplasia. Although many centers are treating all patients with CHD who meet local entry requirements for ECMO, recently published analysis of a series of CHD patients revealed that the use of current predictors of high mortality in such patients (OI, ventilator index >1000 with  $PCO_2 > 40$ , "best"  $PO_2$  postrepair <100 TORR), are unreliable.<sup>6</sup> The use of ECMO on all such patients has been advocated even prior to surgery.<sup>7</sup> Although delayed repair of CHD has been found to improve survival,<sup>8</sup> the use of ECMO does not appear to affect the outcome of infants unresponsive to maximal conventional therapy.<sup>9</sup> Potential ECMO candidates are evaluated with cranial ultrasound to rule out intracranial hemorrhage and cardiac ultrasound to exclude patients with congenital cardiac anomalies.

**Table 1. Criteria For Using ECMO In Newborn Infants**

- Gestational age >35 weeks
- Weight >2 kg
- No structural cardiac disease
- No intracranial hemorrhage
- Respiratory failure unresponsive to maximal conventional therapy
- Fulfills respiratory failure criteria

#### **Contraindications**

- Intracranial hemorrhage
- Profound neurologic impairment
- Irreversible lung damage (ventilator therapy >10 days)
- Bleeding diathesis
- Severe congenital anomalies

## **Physiologic Consequences of Prolonged Cardiopulmonary Bypass**

Patients on ECMO are initially near total cardiopulmonary bypass (ie, 120 ml/kg/min). The ECMO circuit imposes a number of changes in neonatal physiology.

The large blood volume in the circuit (350 ml approximately) which is almost twice the blood volume of the near term newborn, modifies the distribution of endogenous and exogenous (drugs) substances. The resulting larger volume of distribution requires larger doses for certain drugs (eg, fentanyl) but not for others (eg, gentamicin).<sup>10</sup> Other drugs such as phenytoin or diazepam can be significantly bound to the ECMO circuit and consequently high doses of these drugs are often needed to achieve therapeutic effects. Formed elements in the blood can also be affected by the ECMO circuit. Platelets may be destroyed in the membrane lung, red cells may be lysed by the centrifugal pump or oxygenator, and activation of the complement system in the circuit may result in leukopenia.<sup>11</sup> ECMO also produces alterations in the fibrinolytic system.<sup>12</sup> Adequate heparinization is essential to avoid clot formation in the circuit and possible thromboembolism. Relatively large doses of heparin are needed because more than half of the administered heparin is eliminated by the extracorporeal circuit itself.<sup>13</sup>

ECMO accomplished by venous arterial bypass produces a reduction of cardiac output of the neonate, which is proportional to the output of the extracorporeal pump, giving the heart the opportunity to "rest." The persistence of an open foramen ovale and/or ductus arteriosus may negate this benefit (Fig 1).<sup>14</sup>

ECMO facilitates lung recovery by avoiding the continued exposure of the lungs to the damaging effects of high ventilator pressures and  $FiO_2$  on the lung parenchyma, in effect allowing the lungs to recuperate. Since ECMO flow is nonpulsatile, pulse pressure falls as the ratio of ECMO to non-ECMO flow increases. Nonpulsatile flow to the kidneys may produce an increase in aldosterone secretion leading to an increase in sodium reabsorption and increased hydrogen ion and potassium excretion. Experimental nonpulsative perfusion of the kidneys in dogs decreases both urine production and sodium excretion.<sup>15</sup> These facts may explain the significant changes in fluid and electrolyte balance found in ECMO patients. Metabolic alkalosis, edema formation, decreased sodium requirements, and increased potassium needs are found in a number of ECMO patients. The use of ECMO in meconium aspiration is associ-

ated with a rapid decline in vasoconstrictor pulmonary prostanoids.<sup>16</sup>

Techniques and Management

It is not within the scope of this paper to spell out the myriad of technical details to assemble, prime, and set up the ECMO circuit and the principles of management of patients on ECMO. The interested reader is referred to recent reviews.<sup>17,18</sup>

As the infant's lung function and cardiac status recover, ECMO flow is gradually decreased in small increments of 10 to 20 ml. The weaning process is continued until pump flow rate reaches 25 to 50 ml/kg, at which time ECMO is terminated. The usual duration of ECMO is between 3 and 7 days. ECMO is discontinued when there is uncontrollable bleeding, signs of irreversible brain damage, or irreversible lung damage.

ECMO Team

Developing an ECMO program is a major undertaking. It requires an extensive support system. The ECMO team is comprised of a group of highly trained and skilled health professionals: physicians, respiratory therapists, an ECMO specialist, ECMO technicians, and neonatal intensive care nurses. An ECMO specialist is a nurse, perfusionist, respiratory therapist, or physician who has completed an extensive training program. ECMO technicians are usually nurses who completed a program with a minimum of 80 hours of classroom and laboratory instructions. An ECMO technician and nurses are assigned each shift to provide care for one ECMO patient. The ECMO technician constantly checks the circuit, adjusts flow rate, draws blood specimens, measures ACT hourly,

maintains appropriate heparinization, and administers medications and fluids into the ECMO circuit.

Success of ECMO depends on the interaction between all these health professionals, and the use of a team approach in which each individual assumes a specific responsibility.

Our ECMO team included the following physicians: Rosa Ortiz, Alfred Vitanza, Shamim Malik, Subramania Jegathesan, and Richard Ranne. Judy Toman, the ECMO specialist, supervises 10 ECMO technicians.

Departments not involved in providing direct patient care, such as radiology, blood bank, cardiology, neurology, and surgery, need to provide around-the-clock support.

Complications

ECMO is not a risk-free therapy. Complications can

Table 2. Respiratory Failure Criteria
Oxygenation Index (OI)
OI > 40 for > 4 hours or in 3 out of 5 ABC's 30-60 minutes apart
$OI = \frac{MAP \times FiO_2 \times 100}{PaO_2}$
MAP = Mean Airway Pressure PAO <sub>2</sub> = Postductal PaO <sub>2</sub> ABC's = Arterial Blood Gases

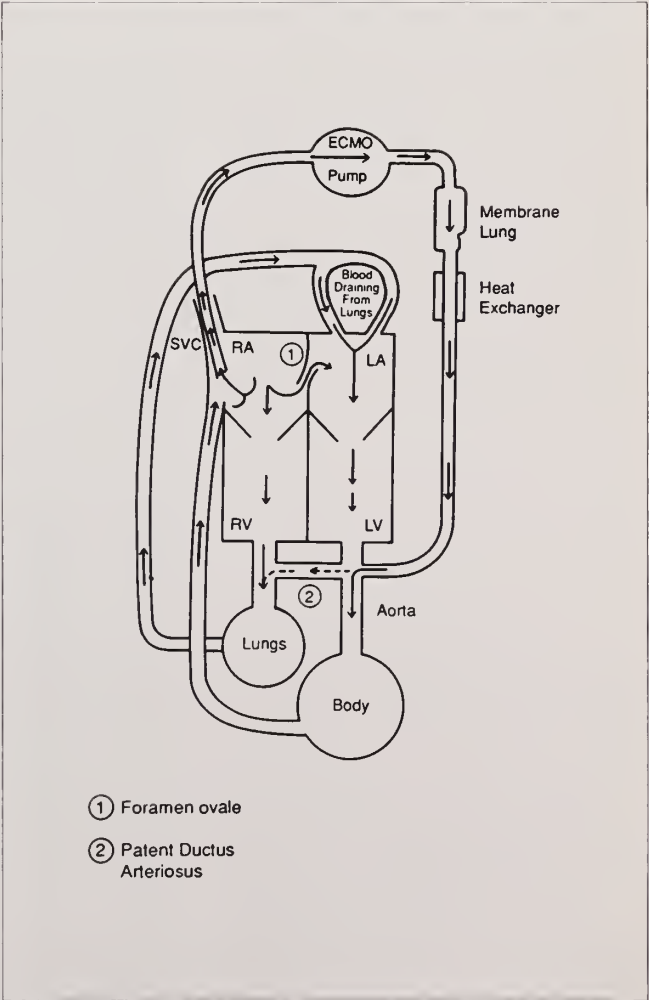


Figure 1. Schematic representation of ECMO-newborn system.



be divided in two groups: (1) complications related to malfunctioning of the ECMO circuit and (2) patient care complications (Table 3). According to the ECMO National Registry, the overall incidence of mechanical complications is about 20%.<sup>19</sup> Death is rarely caused by technical complications. Mechanical complications, however, may require temporary discontinuation of the bypass and this has detrimental effects on the patient. The most dreaded technical complications include air in the circuit, with air embolism, unintentional decannulation, oxygenator failure, and tubing rupture. Prompt recognition and skilled bedside care of the ECMO circuit is essential to minimize these complications.

When patients are placed on ECMO bypass, they are often moribund, having suffered birth asphyxia, severe hypoxia, acidosis, and even cardiac arrest. It is not surprising therefore, that oftentimes it is not possible to discriminate between pre- and post-ECMO complications. In fact, pre-ECMO neurologic impairment may be aggravated by changes in cerebral hemodynamics which occur during ECMO.

The high frequency of seizures in post-ECMO patients, when unrelated to cerebral infarcts, is likely to reflect pre-ECMO hypoxic-ischemic damage. Regardless of etiology, seizures during ECMO are associated with an increased risk of cerebral palsy or developmental delay.<sup>20</sup> The etiology of cerebral infarct is more problematic. Initial reports of right-sided cerebral lesions<sup>21</sup> raised concern about their relationship with right carotid artery ligation.<sup>22</sup> Subsequent prospective studies in ECMO-treated patients failed to demonstrate a right-sided predominance of hemorrhagic or nonhemorrhagic brain lesions.<sup>23,24</sup> Reanastomosis of the carotid artery is performed in a number of ECMO centers, but whether this procedure decreases the incidence of potential complications remains unclear. In a recent study, cerebral blood flow was measured by positron emission tomography (PET) after ligation and reanastomosis of the carotid artery. The reanastomosis of the artery did not alter cerebral blood flow during the neonatal period.<sup>25</sup> The long-term risks of carotid artery ligation are unknown.

ECMO-related systemic hypertension is probably multifactorial. Contributing factors are: elevated renin activity, volume overload, sodium retention, and increased sympathetic tone.<sup>26</sup>

Diffuse atelectasis and/or pulmonary edema manifested as a "white out" on a chest radiograph occurs in a sizable proportion of patients following the initiation of ECMO.

## Results

From January 1973 to July 1991, more than 5,000 newborns were treated at 63 ECMO centers (including 5 centers outside of the United States).<sup>19</sup> The overall survival rate for the entire group is 83%. From 1986 to 1990, survival rates by primary indication for ECMO were: meconium aspiration 93%, persistence of fetal circulation 85%, respiratory distress syndrome 86%, pneumonia/sepsis 76%, congenital diaphragmatic hernia 65%. The survival rate for ECMO use for cardiac support (neonatal and pediatric) was 47%.

Seventeen patients have been treated with ECMO at our center. Twelve of 13 newborns (94%) treated for neonatal respiratory support survived. In four patients, ECMO was used for cardiac support, and two of these patients survived. The major mechanical complication was an oxygenator failure which was successfully repaired; the infant remained unaffected.

## Outcome

The results of neurodevelopmental outcome in ECMO-treated survivors is encouraging. Despite the severity of the initial illness before ECMO, approximately 70% to 80% of patients are considered to be normal at follow-up.<sup>27-30</sup>

Approximately 15% of the patients have mild to moderate handicaps and 15% exhibit marked neurodevelopmental handicaps. One of the infants in our series had severe mental retardation and cerebral palsy and two patients were lost to follow-up. The remaining patients are considered normal, but the follow-up period is too short for a definitive pronouncement. Differentiation between deficits pre-dating ECMO and those related to the procedure remains elusive. No predictors of outcome are currently available.

## Future Trends

Current research efforts are geared to develop methods that would eliminate the need for systemic heparinization. Accomplishment of this goal would not only prevent bleeding complications, but would allow the use of ECMO in preterm infants. Heparin-bonded circuits, new circuit materials such as silastic and polyurethane, or surface modification with drugs to inhibit platelet activation and regional heparinization of the extracorporeal circuit are among the approaches being investigated.

Venovenous bypass is currently being tested,<sup>31</sup> since it has the advantage of avoiding the ligation of the carotid artery. A double lumen catheter for single

site cannulation has been developed.<sup>32</sup> An intravenous gas exchange system to maximize venous gas exchange,<sup>33</sup> and the tidal flow venovenous system<sup>34</sup> are technical devices which may be tested in future clinical trials.

Other technical refinements, in initial stages of development, include computerized servo-controlled pumps and an automatic monitoring system.<sup>35</sup>

The success of ECMO in newborns has sparked interest in expanding its use in pediatric and adult patients with acute respiratory failure. ECMO has already been used successfully to treat life-threatening respiratory failure from bronchiolitis caused by respiratory syncytial viral infection,<sup>36</sup> ARDS, and aspiration syndromes, and as a temporizing measure prior to lung transplantation.<sup>37</sup> ECMO is also increasingly used to assist circulation in postcardiotomy ventricular failure after repair of congenital heart disease.<sup>38</sup>

Summary and Conclusions

ECMO bypass is an effective rescue therapy for the treatment of severe reversible respiratory failure in newborns. The high mortality in infants failing conventional therapy is dramatically decreased by ECMO. There are, however, inherent risks associated with the use of ECMO and potential long-term sequelae. Because ECMO should be considered a last-resort therapy, strict criteria for its use must be followed. Considering the fact that 10% of potential candidates for ECMO die during transfer, however, early referral to an ECMO center is advisable.

Although ECMO has been shown to be cost effective, its indiscriminate use must be avoided. Furthermore, other therapies for neonatal respiratory failure, such as liquid ventilation<sup>39</sup> and high frequency ventilation with surfactant are currently being explored and may limit the use of ECMO in the future.

It must be stressed that ECMO as a final resort in

moribund newborns with respiratory insufficiency was based on prevailing estimates for survival on conventional therapy in the early 1980s. Since then, several factors have led to a decrease in neonatal mortality which varies with institution and physician. For example, a less aggressive mechanical hyperventilation in persistent pulmonary hypertension is associated with a decrease in mortality and morbidity. A recent study revealed survival rates in a group of infants who met standard entry criteria for ECMO but were treated with conventional therapy similar to those found in infants treated with ECMO.<sup>40</sup> It is, therefore, essential that ECMO not become a "standard of care" but that entry criteria be reevaluated as progress is made in the conventional therapy of severe neonatal respiratory failure.

Extension of ECMO therapy to other patient populations should only be done after prospective randomized studies demonstrate its effectiveness. With current emphasis on cost and quality of life, new technologies such as ECMO should

Table 3. Complications Related To ECMO  
Mechanical, Technical, and Medical Complications\*

<b>Complications of ECMO Circuit</b>		<b>Cannula Related Problems</b>	
- Pump failure (1.6%)		Thrombosis	
- Tubing rupture (1.7%)		Dislodgement/Recannulation (7.6%)	
- Air in circuit/ air embolism (1.7%)			
- Clots in circuit (6%)			
- Oxygenator failure (4.2%)			
- Heat exchanger malfunctioning (1.3%)			
- Other mechanical problems (9.9%)			
<b>Medical Complications</b>		<b>Other Reported Complications</b>	
Seizures	(14%)	Cholestasis	
Brain infarction	(16%)	Transfusion related	
Systemic hypertension	(7.6%)	Gastrointestinal perforation	
Surgical site hemorrhage	(4.5%)	Lung edema/atelectasis	
Hemofiltration/dialysis	(11.7%)	Leukopenia	
Hemolysis	(7.6%)	Thrombocytopenia	
Electrolyte abnormalities	(7.8%)	Renal failure	
Pneumothorax	(4.5%)	Vocal cord paralysis	
Gastrointestinal hemorrhage	(3.3%)	Sagittal sinus thrombosis	
Other hemorrhage	(7.2%)		
Hemothorax		Brain atrophy	
Mediastinal hematoma		Periventricular leukomalacia	
Intrapulmonary parynchyma	(1.7%)	Edema	
Vaginal bleeding		Graft versus host reaction	
Hemopericardium			
Myocardial dysfunction	(4.5%)		
("stunned heart")			
Cardiac arrhythmia	(3.6%)		

\*Incidence data are from the Neonatal ECMO Registry, ELSO, January 1992 - N=5479)<sup>19</sup>

(continued)



be subjected to research assessment, not only on effectiveness but also on outcome and appropriateness of care.

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# Penicillin Resistance in *Streptococcus pneumoniae* from Adult Males (1989-91)

D.J. Flournoy, PhD

From 1989 to 1991, 223 clinical isolates of *Streptococcus pneumoniae* from veterans were tested for penicillin resistance. The percentage of resistance to penicillin decreased from 24% to 7% during the study period.

Several studies have reported that penicillin resistance occurs in less than 5% of the *Streptococcus pneumoniae* in the United States.<sup>1-3</sup> However, penicillin resistance has been reported to be unusually high in Oklahoma City.<sup>4-6</sup> In 1977-78, 15.5% of *S pneumoniae* isolated from patients of all ages in Oklahoma City were resistant to penicillin.<sup>5</sup> In 1984, 12.2% of 139 Oklahoma City residents (of all ages) with invasive pneumococcal disease (eg, meningitis, sepsis) had penicillin resistant *S pneumoniae*.<sup>7</sup> Twenty-two of the 139 patients were from the Veterans Affairs Medical Center (VAMC). Of those 22, 2 (9%) had isolates which were resistant to penicillin. The purpose of this brief report is to provide up-to-date information on penicillin resistance in *S pneumoniae* isolated from veteran patients.

## Materials and Methods

Two hundred twenty-three clinical isolates of *S pneumoniae* were tested for penicillin resistance from 1989 through 1991. *S pneumoniae* were identified using the optochin inhibition test. Suspicious alpha hemolytic streptococci were inoculated onto 5% sheep blood agar plates and incubated with optochin discs

(Difco Laboratories, Detroit) in 7% CO<sub>2</sub> at 35°C for 24 hours. Isolates with zones of growth inhibition of 15 mm or greater around the optochin disc were presumptively identified as *S pneumoniae*. Antimicrobial testing was by disc-agar diffusion with 1 mcg oxacillin discs (Difco). Standardized (ie, 10<sup>8</sup> colony forming units/ml) suspensions of patient isolates were inoculated onto Mueller Hinton agar enriched with 5% sheep blood and incubated at 35°C in 7% CO<sub>2</sub> for 24 hours. A zone size of 20 mm or greater was counted as susceptible. Minimal inhibitory concentrations were not determined on the test isolates.

## Results

Table 1 notes the disc agar diffusion test results for *S pneumoniae* for 1989 through 1991. There was a noticeable decrease in resistance during the test period. The percentage of all isolates from various specimens was: 1989 (71% sputa, 21% blood, and 8% other), 1990 (80% sputa, 12% blood, and 8% other), and 1991 (87% sputa, 6% blood, and 6% other). In 1989, 8 penicillin resistant *S pneumoniae* were isolated from sputa, 3 from blood, and 2 from other sites; in 1990, 10 were from sputa and one from blood, and in 1991, 6 were from sputa only.

## Discussion

Several factors make *S pneumoniae* an important pathogen in our patients, including a high number of lower respiratory tract infections,<sup>8</sup> often leading to death.<sup>9</sup> Almost all of our *S pneumoniae* isolates occur in the bloodstream<sup>10,11</sup> and lower respiratory tract,<sup>12</sup> a

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Table 1. Disc Agar Diffusion Results for Penicillin

Year	#Isolates	% Resistant
1989	54	24
1990	82	13
1991	87	7

site which commonly seeds to the bloodstream.<sup>13</sup> In addition, our patient population has a mean age of over 57 years.<sup>14</sup> Patients more than 40 years of age have the highest pneumococcal disease and case fatality rates.<sup>7</sup>

The data from this report are in agreement with that of Istre et al<sup>7</sup> who noted a small decline in penicillin resistance since 1978. Factors which may influence the occurrence of *S pneumoniae* infection in our patient population include: the number of patients who have not been vaccinated with polyvalent pneumococcal vaccine, penicillin usage, and patient race.<sup>5</sup> A summary of usage of PNEUMOVAX<sub>R</sub>23 (Merck & Co, West Point, Pa) at this hospital was not readily available; however, several staff physicians estimated that >90 of our AIDS patients and >70 of the patients seen in the pulmonary disease clinic have been vaccinated with PNEUMOVAX<sub>R</sub>23. Therefore, most of our high risk patients have been vaccinated against the most common types of *S pneumoniae*. Although data on penicillin usage was not readily available, unusually high usage was not likely to have occurred at our institution, according to one staff physician in the Infectious Diseases Section. A high rate (14%) of penicillin resistance was reported in Native Americans living on a reservation in New Mexico.<sup>15</sup> However, since only 3.2% of our patients in 1985 were Native Ameri-

cans,<sup>14</sup> there is little evidence to support the supposition that a high rate of penicillin resistance occurs due to a higher proportion of Native Americans in our patients. Therefore, the reason(s) for a high incidence of penicillin resistance to *S pneumoniae* in Oklahoma City are not known at this time. □

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# Multiple HVDC Shocks as First Aid or Therapy for Venomous Bites and Stings

Carl D. Osborn, MD

Approximately 90% of venomous bites and stings are treated on clinical diagnosis rather than specific identification of the insect, spider, or snake involved. Treatment objectives are to modify a life-threatening situation to one of safety, to prevent or limit damage, and to relieve the pain of the injury as soon as possible. Treatment that can accomplish these objectives without specific vector identification is of value.

A technique of multiple high voltage low amperage direct current (HVDC) shocks utilizing a handheld electronic device (Stun Gun) has been developed based on information from J&K Industries<sup>1</sup> and Outdoor Life<sup>2</sup> and used since September 1988. With a Stun Gun of known voltage, shocks of 40-50 kV seconds (50 kV for 1 second, 25 kV for 2 seconds, etc) are delivered with one contact on the bite or sting and grounded with an extension to shock through the bite or each puncture twice; additional shocks are done from margin to margin, or from center to margin, spoke fashion, to cover the affected area.

In 304 "spider" bites, relief of local and systemic symptoms occurred within a 15- to 20-minute (minimum) observation period. No progression of venom damage was evident in the 80% of patients who came or reported back. Results in the entire series are consistent with the first 147 cases of this series previously reported.<sup>3</sup>

In 42 stings, common name identification was made by the patient or family in 17: 3 bumblebees, 9

wasps, 2 scorpions, 2 yellow jackets, and 1 tick, with 25 unknown. Local relief of pain and itching occurred within 10 to 15 seconds. Decreasing local reaction and improving systemic symptoms were apparent within 15 minutes. Follow-up beyond the 15- to 20-minute observation period was unnecessary, though some who had previously had severe allergic reactions were later questioned and had no residual or delayed reaction after treatment.

## Case Report, Insect Sting

A 12-year-old white male was stung on the bridge of the nose by a "red wasp" and was given 50 mg diphenhydramine at home. Three hours later he was led into the emergency room by his mother. He had a swollen forehead, eyes swollen shut, and slight dyspnea. He was given epinephrine on arrival at 9:45 PM, and 80 mg Solu-medrol at 9:50 PM (both IM). At 10 PM, a picture (Fig 1) was taken and shocks were administered with one contact on the sting and the other on the midline of the forehead hairline, then past the swelling under each eye (3 shocks total) with immediate relief of discomfort. A second picture (Fig 2) was taken at 10:25 PM when the patient walked out unassisted with no dyspnea and reduced swelling. While some of his response may have been due to medication, the immediate relief of discomfort within 10 to 15 seconds would not be expected from medication. The reduction of swelling was more than usually observed within 20 to 25 minutes of medication. Since similar responses have been observed in cases where no medication has been given, I feel HVDC made a major contribution to the patient's rapid recovery.

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Figure 1. Wasp sting on bridge of nose, prior to HVDC treatment.



Figure 2. Wasp sting, 25 minutes after HVDC treatment.

## Discussion

Venomous snake bites are seen infrequently (if at all) by most physicians. Anti-venin is considered the "gold standard" of treatment, with the dose dependent on the severity of the bite, type of snake (if known), and the size of the victim. Unfortunately, there is an appreciable risk of anaphylaxis and serum sickness associated with its use. A procedure that may reduce or eliminate the need for anti-venin could reduce that risk. According to the theories of Kroegel C. Meyer zum Buschenfelde KH,<sup>4</sup> referring to a report of R. Guderian et al,<sup>5</sup> HVDC alters the structure of venom with resulting alteration of action. The experience of the author with 5 snake bites, added to results observed with spider bites and stings, lends weight to that theory.

## Case Reports, Snake Bite

**Case 1.** A 44-year-old white female was admitted to the emergency room at 10:12 PM on July 2, 1990, with a bite on the dorsum of the left foot that reportedly occurred at 9:50 PM. The snake was thought to be a copperhead (*Agkistrodon contortrix*) but it escaped. There were punctures 1 cm apart on the dorsum of the foot in a 7 cm x 7 cm area of erythema and edema. Demerol 50 mg - Phenergan 50 mg was given IM and Decadron 8 mg was administered IV slowly. Shocks of 40-50 kV seconds each were administered through each puncture to the plantar surface, followed by 5 more in radial fashion with one contact centered in the bite and the other at points around the circumference of the area of reaction at 10:25 PM. The patient was admitted to an attending surgeon and transferred to her room at 11:30 PM with an emergency room note stating "patient seemed to be improving." Cefuroxime 250 mg BID was started. Anti-venin was not given (surgeon's decision). Electrolytes, PTT, and hematology values were normal. The patient had been treated for spider bite July 12, 1989, and had a

tetanus booster at that time. On July 3, 1990, there was minimum swelling and discoloration of the left foot. It was painful to pressure but comfortable when the patient was still at rest. Vital signs were normal. On July 4, 1990, Valium 10 mg was given IV and the foot was shocked through each puncture and cross-shocked (40-50 kV seconds each, total 4). Four hours later the attending surgeon discharged the patient to return July 13 for out-patient physical therapy on a triweekly basis. The patient did not keep her fourth appointment, but did return to work July 24, 1990. There was no loss of tissue or function.

**Case 2.** A 29-year-old white male was bitten on the medial aspect of the left heel at about 10 PM on July 2, 1990. 2 cc Celestone plus 2 cc lidocaine was injected at the bite site (prior to arrival at the local hospital). The patient was then transferred to the local emergency room, arriving at 12:15 AM, July 3. The left foot and ankle was noted to be twice the size of the right, with pitting edema to the knee. Shocks (2) of 40-50 kV seconds each were administered through the bite on the heel, dorsum of the toes to the heel (2), and from the plantar surface of the heel to the knee at 3 locations. Ancef 1 gm q8h IV was started and the patient was admitted to an attending surgeon (who elected to not give anti-venin). Vital signs were stable. Laboratory values were normal throughout the hospital stay. On July 5, Valium 10 mg IV was given at 9:20 AM. Shocks (2) of 40-50 kV seconds each were done from the plantar base of the toes to the dorsum of the arch, dorsal base of the toes to the heel (2), and the plantar surface of the heel to locations around the knee (4). At 1:20 PM the patient was discharged by the attending surgeon with a note stating "less swelling, denies any pain." A later verbal report from the surgeon was "no problems."

**Case 3.** A 32-year-old white female came to the emergency room at 6:13 PM with a history of a possible snake bite which occurred 32 hours before while she

was clearing brush. At that time she had picked up "something thorny," but on questioning remembered wiping dark material from her arm. There were two punctures 1 cm apart 7 cm above the wrist on the antero-medial aspect of the right forearm in an area of hyperemia 4 cm x 5 cm. The patient complained of itching and burning in the area. Shocks of 40-50 kV seconds each were administered through the arm through each puncture, across the arm at the level of the punctures, and from the distal margin of the hyperemia to the elbow. Itching stopped immediately. Tetanus toxoid 0.5 cc was given IM. The patient was instructed to take Duricef 500 mg BID and return in 3 days or report any problems immediately. On July 6 the patient was "doing OK." She again had some itching and minimal erythema. Two shocks from the distal edge of the erythema to the elbow relieved symptoms. The patient was released with instructions to finish her medications and report any problems.

**Case 4.** A 9-year-old white male was admitted to the emergency room at 12:20 AM on July 10, 1990, with a history of copperhead bite on the dorsum of the right foot at 11:30 pm July 9 (snake killed, common name ID by family). Multiple HVDC shocks were administered by the emergency room physician. A skin test for anti-venin was negative but anti-venin was not given (decision of attending pediatrician). Rocephin 1 gm IV q12h was started and the patient was admitted for care. There was some discoloration of the foot with edema to the ankle. At 6:15 PM, because of persistent pain to pressure, 20 mg Demerol was given IV and the foot was reshocked (8 shocks of 40-50 kV seconds each). The patient was ambulatory and pain free the next morning and was discharged at 6:05 PM on July 11 by the attending pediatrician with a prescription for Ceclor 250 mg TID #15. Laboratory values were normal and vital signs were stable during the patient's 2-day hospital stay.

**Case 5.** A 35-year-old white female was clearing the edge of her yard, wearing shorts, when she noticed "something" hanging on her right leg. On inspection it was found to be a hollow tooth filled with dark material except at the tip (described by the patient, lost before inspection by a physician). When seen 20 minutes after discovery of the injury, she was found to have a small spot of blood 1/2 inch from the fang mark with erythema around the bite. The injury was diagnosed as snake bite with minimum envenomation, lateral aspect, right calf. HVDC shocks of 40-50 kV seconds were administered with one contact on the bite and the other at 8 positions around

the bite past the margin of erythema. Duricef 500 mg BID was started and Medrol Dospak was prescribed. The patient was contacted by phone 5 hours later and reported that all redness had disappeared. She had no sequelae.

## Discussion

The specific cause of a venomous bite or sting is not usually identified. Treatment is based on clinical diagnosis in 80% to 90% of cases, and should be started as soon as possible to avoid anaphylaxis, limit tissue damage, and reduce pain. The safety of the victim is paramount and immediate transport to a medical facility for appropriate management is mandatory. Multiple shock HVDC does not interfere with any indicated medication or procedure and has reduced the need for some that have been used routinely. Specific identification of the vector has not been necessary since beneficial effect has been observed with every type of venom encountered to date in this area. Other than momentary discomfort, NO complication has occurred with the HVDC shock technique as outlined. The immediate response and absence of later reaction supports the theory of venom modification.<sup>4</sup>

## Summary

Multiple HVDC shocks of 40-50 kV seconds each have been effective in 351 cases of venomous bites and stings with no complications from the shocks. Tissue damage from venom has consistently been arrested with the first series of shocks. The simple procedure can be done in 1 to 2 minutes on site or in transit. Any other indicated treatment may be used in conjunction with the HVDC shocks. Potential infection should be covered with broad spectrum antibiotic therapy. Tetanus protection should be current. Age and/or medical conditions are NOT contraindications to HVDC. Its use for first aid and as a therapeutic measure is recommended. **ALTERNATING (HOUSE) CURRENT IS ABSOLUTELY CONTRAINDICATED.** [J]

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# Assisting Physicians in Decision-Making

John T. Kelly, MD; James E. Swartwout, MA

The American Medical Association's longstanding commitment to improving the quality of medical care has been marked by a variety of efforts, from improvement of medical education and accreditation to technology assessment and peer review.<sup>1</sup> But with increasing nationwide attention on evaluating quality of care,<sup>2,3</sup> the AMA, as well as many other physician organizations, has focused on developing practice parameters that identify appropriate medical care.<sup>4</sup>

**P**ractice parameters, as defined by the AMA and other physician organizations, are strategies for patient management developed to assist physicians in clinical decision-making.<sup>5,6</sup> Practice parameters include guidelines, standards, and other patient management strategies. Guidelines are recommendations for patient management, which may identify a particular management strategy or a range of management strategies. Standards are generally accepted principles for patient management. Other strategies for patient management include practice options and practice advisories.

Practice parameters are primarily developed as educational tools for physicians. In addition to physi-

**Related article on page 319.**

cian education, practice parameters have a wide variety of uses, including quality assurance, utilization review, and risk management.

Properly developed practice parameters can yield

substantial benefits for physicians and patients by improving the quality of medical care. For example, the practice parameter on basic intra-operative monitoring developed by the American Society of Anesthesiologists has reduced the incidence of hypoxic injury among patients and the professional liability premiums of anesthesiologists who adhere to the practice parameter.<sup>7,8</sup> Practice parameters are also capable of facilitating the appropriate utilization of specific medical services. For example, the practice parameter on the implantation of cardiac pacemakers developed by the American College of Cardiology has contributed significantly to a rise in the appropriate utilization of that cardiovascular technology.<sup>4,7</sup>

## Brief History

As the demonstrated usefulness of practice parameters has grown, so has interest in their development. In the 1930s, only one physician organization was developing practice parameters; by 1980 eight physician organizations were actively engaged in this endeavor; and by early this year, at least 32 physician organizations had developed practice parameters, with many other physician organizations planning to do so. In total, over 1,100 practice parameters have been developed by physician organizations and others.<sup>5</sup> In May 1991, over 200 practice parameters were under development.<sup>9</sup>

The medical profession has been the primary force in the development of practice parameters, although other organizations, such as the federal government, have recently initiated activities in this area.<sup>10-12</sup>



## Examples of Practice Parameters

Practice parameters vary in content, format, degree of specificity, and method of development. They may address issues ranging from general aspects of medical care to management of specific clinical conditions, and may identify a range of interventions (eg, diagnostic, therapeutic, preventive) for management of specific clinical conditions or may identify clinical conditions for which specific interventions may be appropriate. Development may be by synthesizing information from scientific research and/or clinical experience pertinent to a given clinical issue.

Practice parameters can for example:

- **Indicate levels of appropriate care.** The American College of Cardiology and the American Heart Association (ACC/AHA) have developed a practice parameter which indicates the relative appropriateness of interventions used in the early management of patients with acute myocardial infarction (MI).<sup>13</sup> This practice parameter addresses indications for motivating the patient, medical, and surgical treatment options, including invasive cardiologic procedures, predischARGE evaluation, classification criteria for early evolving, late evolving, and conva-

lescent myocardial infarction, and transportation of the patient.

- **Define minimal standards of care.** The American Society of Anesthesiologists (ASA) has developed a practice parameter on standards for basic intra-operative monitoring which lists the methods for continually evaluating the oxygenation, ventilation, circulation, and body temperature of a patient receiving anesthesia.<sup>14</sup>

- **Be prescriptive.** An American College of Physicians (ACP) practice parameter provides a step-wise application of specialized testing after acute myocardial infarction.<sup>15</sup> The practice parameter guides the physician through the appropriate use of specialized tests in the identification of patients at low, moderately high, and high risk. Accurate determination of the risk level of the patient enables the application of aggressive medical and surgical therapy to patients at moderate to high risk and accelerated recovery for patients at low risk.

- **Be proscriptive.** The American Academy of Allergy and Immunology (AAAI) has developed a practice parameter for cytotoxicity testing which concludes that there is no proof that leukocytotoxic

## Practice Parameters: Physician-Developed Strategies for Patient Management

The AMA, working with the Practice Parameters Partnership and the Practice Parameters Forum, has developed several practice parameter products to assist practicing physicians:

*The Directory of Practice Parameters* is an annual publication listing over 1,100 practice parameters developed by physician organizations and others. Provides ordering information for each practice parameter listed.

*The Practice Parameters Update* is a quarterly newsletter that lists the practice parameters under development, newly completed, and recently withdrawn.

*Attributes to Guide the Development of Practice Parameters* identifies the essential characteristics of well-developed practice parameters.

*QA Review* focuses on actual quality assurance problems and provides practical information that physicians can use in their day-to-day practice of medicine.

*Legal Implications of Practice Parameters* is

an authoritative guide to the legal implications of medical practice parameters with suggestions for minimizing liability.

*Practice Parameters: A Medical Society's Guide to Their Legal Implications* provides suggestions for medical societies on minimizing risk associated with the development of practice parameters.

*Practice Parameters: A Physician's Guide to Their Legal Implications* is a condensed summary of the conclusions reached in the AMA study about the effects of practice parameters on the malpractice liability of physicians.

*Practice Parameters: Strategies for Patient Management* is a 12-minute videotape on how practice parameters can improve medical practice.

*Practice Parameters: Impact on Liability* is a 15-minute videotape on the practical implications of practice parameters on physicians' practices.

These products may be ordered by calling 1-800-621-8335. Visa and MasterCard accepted. ☐

testing is effective for diagnosis of food or inhalant allergy.<sup>16</sup>

## Development of Practice Parameters

Recognizing the importance of practice parameters to improving the quality of medical practice and acknowledging the tremendous diversity in the content of practice parameters and their uses, the AMA has established two working groups: the AMA/Specialty Society Practice Parameters Partnership and the AMA/Specialty Society Practice Parameters Forum. Comprised of 14 national medical specialty societies and the AMA, the Practice Parameters Partnership established "a cooperative activity created for the purpose of guiding and coordinating the activities of the medical profession in the development, evaluation, implementation, and application of practice parameters."

Comprised of over 65 state medical and medical specialty societies, the Practice Parameters Forum established "a participatory activity created for the purpose of facilitating the development, evaluation, and implementation of practice parameters."

The AMA, in conjunction with the Practice Parameters Partnership and Practice Parameters Forum, has identified five attributes to guide the development of practice parameters to ensure that practice parameters are scientifically sound, clinically relevant, and applicable in the day-to-day practice of medicine.<sup>6,7</sup> Many national medical specialty societies and other physician organizations that are developing practice parameters are using these attributes as templates. These attributes, if adhered to, should help ensure that physicians receive professionally accurate, practical, and authoritative information on relevant clinical issues. According to these attributes, practice parameters should be: developed by or in conjunction with physician organizations; developed using reliable methodologies that integrate relevant research findings and appropriate clinical expertise; as comprehensive and specific as possible; based on current information; widely disseminated.

## Application of Practice Parameters

There are many uses of practice parameters. Through the implementation of effective continuing medical education and quality assurance efforts, practice parameters have resulted in an increase in the appropriateness of the use of cardiac pacemakers and x-ray pelvimetry.<sup>17</sup> Combined with regular feedback of information to physicians, they have facilitated improvement of performance of Pap smears.<sup>18</sup> Prac-

tice parameters on proper timing of prophylactic antibiotic administration caused a 50 percent decline in incidence of deep post-operative wound infections in one hospital.<sup>19</sup>

Practice parameters have improved the appropriateness of prescriptions for antibiotics;<sup>20</sup> those for performance of Cesarean section resulted in a decrease in the C-section rate in one hospital with no increase in fetal or maternal morbidity or mortality.<sup>21</sup> Inpatient psychiatric chart review parameters allow knowledgeable nonphysician reviewers to select cases for which physician review is appropriate.<sup>22</sup> Practice parameters for admission and continued stay in intensive care units, accompanied by appropriate feedback to physicians, have shortened length of stay and facilitated improved utilization.<sup>23</sup>

In risk management, practice parameters on the management of nontraumatic chest pain in adults have identified ways to reduce liability exposure through adherence to practice parameters, scrupulous documentation, physician feedback and education based on chart review.<sup>24</sup> Monitoring of patients undergoing general anesthesia according to parameters has resulted in a marked reduction in the incidence of hypoxic injuries.<sup>25</sup>

Practice parameters also provide a foundation for the review criteria used in quality assurance programs, utilization review systems, and payment coverage decisions and should improve the appropriateness of the review criteria.<sup>26</sup>

The AMA has studied the legal implications of practice parameters and concludes that they do not create new professional liability exposures for physicians and, in fact, may have a positive effect on the fairness and predictability of malpractice litigation by reducing the variability in standards of care determined by courts, thereby improving the malpractice claim resolution process.<sup>27</sup>

The AMA is committed to the development and dissemination of scientifically sound, clinically relevant practice parameters as a method to assure the quality of medical care. Properly developed practice parameters present a promising strategy to define appropriate medical care, provide a rational foundation for examining the appropriateness of medical care provided, and establish a means to assure appropriate utilization of health care services. □

### Authors' Note

Portions of this article were reproduced with permission from Kelly JT, Swartwout JE: Practice parameters: a foundation for quality advancement. *Journal of the American Association of Preferred Provider Organizations*, 1991;1:33-38.



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A medical center is one of the few places—perhaps the only place—where one can see the entire exciting process of the mind of man working at its best from start to finish. ...the birth of an idea; the establishment of its validity; the placing it in a usable concept; the teaching of it to others; the testing it for practical utility; the careful weighing of the moral and ethical questions that inevitably arise concerning its use; and its discriminating application for the benefit of a particular human being.

—Walsh McDermott  
*Journal of Chronic Diseases*  
16:108,1963



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*1992-93 officers and delegates elected*

## New leadership in place for OSMA, PLICO, and OSMA Auxiliary

President James D. Funnell, MD, an obstetrician-gynecologist in Oklahoma City, heads the slate of 1992-93 officers for the Oklahoma State Medical Association (OSMA).

Also elected during the association's Annual Meeting, held May 29-31 at the Marriott Hotel in Oklahoma City, were President-Elect G. Lance Miller, MD, Tulsa oncologist, and Vice-President Jay A. Gregory, MD, Muskogee surgeon. Elaine N. Davis, MD, Enid obstetrician-gynecologist, continues as secretary-treasurer.

Oklahoma City surgeon Larry L. Long, MD, remains speaker of the House of Delegates, with Mary Anne McCaffree, MD, Oklahoma City pediatrician, serving as vice-speaker.

Dr Gregory was also named chair of the OSMA Board of Trustees and Dr McCaffree will serve as vice-chair. Both positions are two-year terms. In other action, the board approved the appointment of JOURNAL Editor M. DeWayne Andrews, MD, Oklahoma City, to a full three-year term.

**AMA Delegates.** Elected as delegates to the American Medical Association (AMA) were John R. Alexander, MD, Tulsa, and M. Joe Crosthwait, MD, and Perry A. Lambird, MD, Oklahoma City. Alternate delegates to the AMA are David M. Selby, MD, Enid; Boyd O. Whitlock, MD, Tulsa; and Dr McCaffree. Both delegates and alternate delegates serve two-year terms.

**PLICO Board of Trustees.** Slots on the Board of Trustees of the Physicians Liability Insurance Company (PLICO) will be filled by Ed L. Calhoon, MD, Beaver; Billy R. Goetzinger, MD, Oklahoma City; William C. McCurdy, MD, Norman; Floyd F. Miller, MD, Tulsa; and Dr Alexander. PLICO trustees serve for three years.

**OSMA Board of Trustees.** Serving as OSMA trustees and alternate trustees, respectively, will be the following:

District VI (Oklahoma City), Position I: Jon C. Axton, MD, and Dr Andrews, Oklahoma City. Position II: Donald R. Carter, MD, and Wayne L. Wasemiller, MD, Oklahoma City.

District VII (Cleveland, Creek, Lincoln, McClain, Okfuskee, and Pottawatomie counties): Chester L. Bynum, MD, Norman, and David L. Holland, Jr., MD, Shawnee.

District VIII (Tulsa County), Position I: Dr Whitlock and C. Wallace Hooser, MD, Tulsa. Position II: Douglas C. Hubner, MD, and David L. Harper, MD, Tulsa. Position III: W. Frank Phelps, MD, and David J. Confer, MD, Tulsa.

District IX (Adair, Cherokee, McIntosh, Muskogee, Okmulgee, Sequoyah, and Wagoner counties): Dr Gregory and Bonnie J. Ashing, MD, Tahlequah.

District X (Haskell, Hughes, Latimer, LeFlore, Pittsburg, and Seminole counties): R. Kern Jackson, MD, McAlester, and Charles D. Cook, MD, Poteau.

**OSMA Auxiliary.** The OSMA Auxiliary (OSMAA), holding its Annual Meeting in conjunction with the OSMA meeting, installed its 1992-93 officers. Succeeding Susan Paddock as president is Judy Critchfield (Mrs Carl), Muskogee. President-elect is Karen Mask (Mrs Dennis), Edmond. First vice-president is Jeary Seikel (Mrs Michael), Oklahoma City, and second vice-president is Maggie Hubner (Mrs Douglas), Tulsa. Keith (Mrs William) Oehlert, Oklahoma City, is recording secretary; Patricia (Mrs Haskell H.) Bass, Tulsa, is treasurer, and Debbie (Mrs James) Glasgow, Ada, is treasurer-elect.

Regional vice-presidents for the OSMAA are Kim (Mrs Robert) Keith, Woodward, Region I; Peggy (Mrs Jeffrey) Pardee, Oklahoma City, Region II; Carole (Mrs Thomas) Ashcroft, Tulsa, Region III; Pat (Mrs Randall) Jenkins, Chickasha, Region IV; Jan (Mrs J. Pat) Sullivan, Norman, Region V; and Jan (Mrs James E.) Milton, Chickasha, Region VI. J

## IN MEMORIAM

### 1991

Mark Duane Hopping, MD .....	May 1
William Alfred Cunningham, MD .....	May 13
Gilbert Wayne Tracy, MD .....	May 13
George Clifford Moore, MD .....	May 24
Daisy Gertrude Cotten, MD .....	May 26
Edward Woodrow Ellis, MD .....	May 28
Ronald I. Cramer, MD .....	June 16
Edward Tiffin Cook, Jr., MD .....	June 18
Arvin Craig Roberson, MD .....	July 15
John Berry Gilbert, MD .....	August 6
Frank Leo Bradley, MD .....	August 31
Rugie Reginald Coates, MD .....	September 15
James Byron Snow, MD .....	September 28
Howard Angus, MD .....	October 9
Jack Owen Alexander, MD .....	October 21
Roy Oliver Kelly, Jr., MD .....	October 22
Lowell Francis Thornton, MD .....	October 22
Lillian Marie Hoke, MD .....	October 25
Irwin Hubert Brown, MD .....	October 27
Harold Houston Jones, Jr., MD .....	October 27
Francis Ray First, Jr., MD .....	October 28
Robert W. Kahn, MD .....	October 30
Charles Hugh Wilson, MD .....	October 30
George Kellogg Stephens, MD .....	November 4
Edward M. Farris, MD .....	November 22
Weldon Keiller Haynie, MD .....	November 25
Samuel Richard Fryer, MD .....	November 30
William Thomas Snoddy, MD .....	December 3
Philip George Joseph, MD .....	December 20
Charles Patrick Kirkland, MD .....	December 24

### 1992

John Moore Campbell III, MD .....	January 24
Bruce Ratliff Hinson, MD .....	January 24
Louis Carroll Taylor, MD .....	February 3
Earl Russell Muntz, MD .....	February 4
Claude Marion Bloss, Jr., MD .....	February 24
Oliver James Hagg, MD .....	March 31
Francis Patrick Cawley, MD .....	April 17
Don Horatio O'Donoghue, MD .....	April 20
Billie Gene Henley, MD .....	April 24
Arlo Kenneth Cox, MD .....	April 27
Charles Victor Williams II, MD .....	May 1
Benjamin Joe Myers, MD .....	May 13
Robert Victor Bolene, MD .....	May 18
William Anders Crockett, MD .....	May 30
Charles Jackson Young, MD .....	May 31

## Association welcomes exhibitors back to OSMA Annual Meeting

This year the OSMA Annual Meeting in Oklahoma City once again featured exhibitors. Absent for several years, the booths and displays added color and interest to the meeting and gave exhibitors and Oklahoma physicians a chance to get acquainted.

Visitors to the exhibits were able to register for a grand prize drawing, conducted during the Closing Session of the House of Delegates. The prize, a portable color television/VCR, was won by Dr Carol Blackwell Imes.

The OSMA extends its appreciation to the following exhibitors and contributors for helping to make this year's meeting such a success:

Annashae Corporation  
 Baylor Institute for Rehabilitation at Dallas  
 Blue Cross/Blue Shield of Oklahoma  
 BNI, Inc.  
 Boehringer Ingelheim  
 Caremark  
 C.L. Frates & Co.  
 Deaconess Hospital  
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 Four Seasons Nursing Center  
 Geigy Pharmaceuticals  
 Guaranty Bank and Trust Co.  
 Harrison Associates, Inc.  
 HealthSouth  
 I.C. System, Inc.  
 Integrated Business Solutions  
 Laureate Psychiatric Clinic and Hospital  
 McNeil Pharmaceuticals  
 Medical Arts Laboratory  
 Medical Claims and Practice Systems  
 Miles Pharmaceuticals  
 Oklahoma Medical Assistants  
 Oklahoma Medical Political Action Committee  
 One Financial Center  
 Physicians Total Care  
 PVS Medical Systems  
 Professional Office Management, Inc.  
 Richard Green Biographies  
 SHARE Psychiatric Day Treatment Center  
 Stillwater National Bank  
 Turnkey Computer Systems, Inc.  
 US Air Force Recruiting Service  
 University of Oklahoma College of Medicine at Tulsa  
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(Right)  
Mrs Billy Dale Dotter  
places a Past President's  
pin on her husband's lapel  
as new OSMA President  
James D. Funnell, MD,  
watches.

(Far right)  
AMA President-Elect  
John L. Clowe, MD, was a  
special guest at this year's  
OSMA Annual Meeting.



(Far left) At the head table at  
the Inaugural Ball are Susan  
Paddack, outgoing OSMA  
Auxiliary president, with Dr  
Gary Paddack (l) and  
incoming OSMAA President  
Judy Critchfield (r) and her  
husband Dr Carl Critchfield.

(Left)) OSMA Executive  
Director David Bickham and  
Oklahoma County Medical  
Society Executive Director  
Doris Clark enjoy the  
Inaugural festivities.



OSMA leadership for 1992-93 includes Larry L. Long, OKC, speaker  
of the house; Stephen Tkach, OKC, teller, House of Delegates; John  
R. Alexander, Tulsa, PLICO trustee and AMA delegate; Mary Anne  
McCaffree, OKC, vice-speaker of the house, vice-chair of the board,  
and AMA alternate delegate; (behind Dr McCaffree) James D.  
Funnell, OKC, OSMA president, and G. Lance Miller, Tulsa,  
president-elect; Donald R. Carter (front row), OKC, trustee; Jay A.  
Gregory, Muskogee, chair of the board and vice-president; R. Kern

Jackson, McAlester, trustee; C. Wallace Hooser, Tulsa, alternate  
trustee; Wayne L. Wasemiller, OKC, alternate trustee; Chester L.  
Bynum, Norman, trustee; David M. Selby, Enid, AMA alternate  
delegate; Jon C. Axton, OKC, trustee; Douglas C. Hubner, Tulsa,  
trustee; Boyd O. Whitlock, Tulsa, trustee and AMA alternate  
delegate; and Billy Dale Dotter, Okeene, immediate past president  
and AMA alternate delegate.

*Awards presented in Oklahoma City*

## **Twelve OSMA student members earn recognition at 'Senior Banquet'**

Several student members of the Oklahoma State Medical Association were honored at their annual senior banquet on May 29.

Recognized for their academic and leadership achievements in the College of Medicine at the University of Oklahoma Health Sciences Center in Oklahoma City were the following:

**Wynter Stratton** - Janet M. Glasgow American Medical Women's Association Achievement Citation, and Hewlett-Packard Award for outstanding academic achievement.

**Patricia Fenderson** - Janet M. Glasgow American Medical Women's Association Achievement Citation, and Hewlett-Packard Award for outstanding academic achievement.

**Kyle P. Johnson** - Hewlett-Packard Award for outstanding achievement, and James A. Merrill Award in Obstetrics and Gynecology.

**Mark A. Worley** - Hewlett-Packard Award for outstanding achievement, and Benjamin Rush Award recognizing the outstanding student in psychiatry.

**Jonathan Drummond** - Merck Book Award for academic excellence.

**Elizabeth L. Fagan** - Excellence in Emergency Medicine Award, given to recognize a student who has excelled in this specialty.

**Bryan R. Whitlock** - Oklahoma City Surgical Society Award, given to the most outstanding senior in surgery.

**Michael R. Hahn** - OU Neurological Surgery Award, given to the student with the most interest in this specialty.

**Jeffrey R. Shuart** - Malcolm E. Phelps Award in Family Medicine, given to the student who demon-

strates consistent sensitivity to the ideals of medical throughout medical school.

**Darin K. Brannan** - William Delaney Jr. Award, given to a student who best exemplifies the ideal patient/doctor relationship with children.

**Edward Oorjitham** - Robert C. Lawson Award, given to a student who has demonstrated exceptional humane qualities during training.

**Clifford Hal Harris** - Dean A. McGee Medical Research Award, given to recognize a student who demonstrates aptitude for potential for productivity in medical research. □

### *Board of Trustees meets*

## **Ten applicants receive Life Member designation May 29**

Ten Oklahoma doctors were named OSMA Life Members at the May 29 meeting of the Oklahoma State Medical Association's Board of Trustees.

Those granted the designation at the Oklahoma City meeting were:

Carl Barclay, MD, Tom Lamar Johnson, MD, and Ralph C. Wilson, MD, Oklahoma City; A. Stanley Bailey, MD, Guthrie; Joyce Eisenbraun, MD, Stillwater; Paul F. Grice, MD, Muskogee; Donald E. Johnson, MD, Enid; William Murphy, Jr., MD, McAlester; George R. Randels, MD, Forest Park; and Richard G. Williams, MD, Tulsa. □



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Oklahoma State Department of Health

## Health department will begin CLIA compliance inspections in FY '93



The Clinical Laboratory Improvement Amendments (CLIA)) were enacted by Congress in 1988 to upgrade and standardize laboratory tests across the nation. Implemented and monitored by

the Health Care Financing Administration (HCFA), CLIA becomes effective this year. Laboratories currently regulated by HCFA are to begin meeting these new federal regulations immediately.

Three priorities set by HCFA aim at providing smoother implementation. The first priority is to ensure the safety and accuracy of testing through quality control and quality assurance. The second is to build and maintain a consistent regulatory structure based on the complexity of tests performed. Priority number three is to provide ample flexibility to preserve patient access to clinical tests while encouraging continued technological innovation.

CLIA mandates that a laboratory's standards vary depending on the complexity of the tests they perform. CLIA regulations define three levels of complexity. The first level is that of waived tests. There are eight tests in this category and most have been cleared by the FDA for home use. An office laboratory performing only these tests may apply for a waiver from CLIA oversight. The second level

consists of moderately complex tests. The third category is that of high complexity. Laboratories classified as moderate or high will be inspected at least once every two years after meeting all other requirements. All laboratories must be certified by HCFA.

HCFA anticipates organizations that currently accredit laboratories will apply for approval after CLIA requirements are published. There are no existing accreditation organizations for this program. All states are subject to the CLIA requirements.

Approximately 192 hospital and independent laboratories operate within Oklahoma. Laboratories located in nursing homes, home health agencies, hospices, rural health, and other clinics are included. Also, corporate and student health facilities, mobile and walk-in screening programs, and physician's offices will be monitored. Using a formula based on the number of practicing physicians in Oklahoma, an estimated 1,500 additional laboratories will be affected by the CLIA regulations.

The Oklahoma State Department of Health will begin on-site inspections of the newly regulated laboratories in fiscal year 1993. For more information, contact Special Health Services, Hospitals and Related Institutions Division, Oklahoma State Department of Health at 405/271-6576. JD

## Dr Stein wins Blair Friend of Medicine Award and a standing ovation

At the OSMA President's Inaugural Banquet on May 29 in Oklahoma City, a number of awards were presented and acknowledged. One of the most memorable of the "speeches" made that night was that of Howard F. Stein, PhD, a professor in the OUHSC Department of Family Medicine, who received the Donald J. Blair Friend of Medicine Award. His comments reveal much about why he was selected for that award. They also brought a standing ovation from those who heard them:

### To Be a Friend of Oklahoma As a Friend of Medicine

What is real recognition? We spend much of our lives wearing masks others have put on our faces, or masks we put on to get approval. Rarely are we affirmed for our real selves. The Blair Award is a recognition of

who all I wish to be, integrated into one. This award acknowledges my love for, and contribution to, medicine—not only family medicine, in which department I am housed, but also rural and urban medicine, occupational medicine, transcultural psychiatry, community medicine, the PA program, rehabilitation medicine, biomedical ethics, pediatrics, and nursing—and my love for Oklahoma.

Dr Don Karns, one of the Enid physicians who brought me here fifteen years ago—and who for a while wondered what kind of weird Yankee this was he had working with the doctor from Watonga and Laverne!—told me a couple of years ago that one of the things he most appreciated about me and my teaching style was that I didn't run Oklahomans down. I listened. I cared. I took time. I appreciated and still appreciate the compliment. But I am still puzzled about why others are so quick to ridicule the



## Friend of Medicine *(continued)*

almost Biblical work ethic, the spiny scrub oak that endures better than most humans, a sky where you can hardly hide from yourself, an iron-rich red clay that glows at sunset, and a people for whom the word "friend" usually means something more enduring than a disposable commodity.

I still love the tall, sleek maples and oaks and elms of western Pennsylvania where I was raised, but I've come to love the feisty Oklahoma bushes and trees for themselves. I've learned more about Oklahoma families and cultural psychology from old time general practitioners/family doctors ignorant of the latest theories and jargon, than I have from many social scientists who are long on theory and short on time "in the trenches." I'm less worried—politically, intellectually, or clinically—about so-called "rednecks" than I am about colleagues who scoff at frayed collars. Better a threadbare shirt than a threadbare heart.

We should not aspire to make Oklahoma the UCLA or Harvard or Chicago of the Great Plains; this is the wrong comparative model. Sure, we must learn from everyone, from everywhere. We humans import



Dr Stein

and export ideas all the time. But let's strive to make Oklahoma the *Oklahoma* of the Great Plains; others will want to emulate us, and not for our having been the best imitation around. Oklahoma is not some fatal disease, not some physical or mental affliction. Oklahoma is not some collective "boonies" we've got to recover from, some embarrassment.

There is a lot to be learned from the wheat belt, the Panhandle, Little Dixie, the Ozark foothills, and tumbleweed country. Let the people teach us, let us not be afraid of what they know, and let us not call it backwardness. To be a friend of Oklahoma medicine, there is neither "town" nor "gown"—only people, just folks.

I want to close with a poem I wrote in the middle of a medical conference I attended last November. Things were looking grim for funding, for residency, for the future of the Health Sciences Center. So who do we pick on, to make ourselves feel better? Oklahoma. It was Oklahoma's fault. We had no need to

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look inward to our own values, our own priorities.  
This was my silent reply:

**A Place Called Desolate**

They call it desolate  
When wind-chased tumbleweed  
Lumber, roll, fly  
Over flat grasslands,  
Wheat fields, paved highways,  
And dirt roads;  
When a clump of half-dead  
Cottonwood clings to a  
Streambed that fills at flood,  
But mostly flows  
Red clay mud.  
I have made home  
Driving roads lined dense  
With winter straw.  
Desolate is not  
The place I saw.

Thank you, and shalom.



**OSMA General Counsel Ed Kelsay** proudly shows off his Presidential Citation. Out-going President Billy Dale Dotter, MD, (r) presented the award to Kelsay for his 25 years of dedication and service to the association. Applauding is Larry L. Long, MD, speaker of the OSMA House of Delegates.

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## OSMA president and president-elect report to House of Delegates

The reports of the OSMA president and president-elect rank among the most important and interesting of those presented at each year's Annual Meeting. Together they present leadership's view of the past year and vision of the year to come. Because of their wide appeal, they are reprinted here:

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### Report of the OSMA President

Billy Dale Dotter, MD  
OSMA President 1991-92  
To the Opening Session of the  
OSMA House of Delegates  
Friday, May 29, 1992

Delegates, Officers and Guests:

We have much work to do and in the interest of time I will not itemize the past year. A review of the excellent reports in your handbook will reflect the myriad activities of your association since May '91. I do want to personally thank all committee and council members and especially their chairs for the superb effort and dedication of time.

Many problems were addressed, a few were solved, but most are ongoing. Just to note a few:

- Legislation that cleaned up the Living Will mess was passed, thanks to the efforts of Senator Cal Hobson, Representative Jeff Hamilton, our own Claudia Kamas, and a multitude of others who joined the OSMA-OBA Coalition.

- We have, so far, dodged the Provider Tax bullet thanks to some excellent jawboning by David Bickham and staff.

- A disability policy was made available to medical students and residents, including coverage for AIDS contracted through work or study requirements. There remains a problem of affordability, and we probably will need to set up a foundation similar to our Physician Recovery Foundation that will let us loan students a portion of premiums, particularly during clinical years. It is inevitable that some of these fine young people will start to test positive from activities mandated by their training. We must plan our aid *before* this happens.

- RBRVS, CLIA, PRO, DUR, etc, the capitals continue to flow from DC via HCFA. Gad, I hate it when they spell, unless it is a BLT and a COKE. Drug Utilization Review on Medicaid patients must be in place by January '93. Cooperation with the Pharmacist Association has been excellent and Dr Tom Whitsett, Dr Jim Funnell, Lyle Kelsey, and the OSMA staff are "up to speed." Please read Dr Whitsett's report, as I am certain this will be expanded once in place.

- Practice parameters (I resisted putting in CAPS) are also just around the bend. Dr Jay Gregory of Muskogee is

your OSMA "guru" in this regard. Over the past two years he has been monitoring this, and I am sure he will require input and assistance from many of you in various specialties as they come into bloom and impact the practice of medicine.

- OSMA and OAFP have worked diligently the past year on the family practice residency building at OUHSC—hopefully we will see it approved this year, but if not, we must continue to press, and press, and press.

The annual meeting has a number of changes:

- Expanded a half day to allow more time for reference committees, CME, etc.

- Cash bars, so we neither dictate nor enable (it has allowed a fifteen percent reduction in dinner prices), and exhibitors are back.

Let us know your reaction pro or con to the changes.

I love the practice of medicine, second only to my family. I care for my patients and nurses who tend their needs. I admire and respect each of you as a colleague, and I applaud your efforts within this association and throughout the House of Medicine. Thank you so much for allowing me to serve as your president this past year. I enjoyed it and I shall not forget a moment.

---

### Report of the OSMA President-Elect

James D. Funnell, MD  
OSMA President 1992-93  
To the Closing Session of the  
OSMA House of Delegates  
Sunday, May 31, 1992

### Medicine: Standing At The Crossroads

Good morning to my friends, my colleagues, and to you, members of the House of Delegates, and to all of our guests.

It is an honor for me to stand this morning before this body and feel the humbling experience of being selected as your president. Dr Dotter and the previous administration, as well as the administration of the state medical association, have done everything in their power to work on, and to solve, as many of the problems as has been humanly possible. But, my friends, medicine, medicine in Oklahoma, in the United States, and for that matter the entire world, stands at a crossroads of history.

Medicine is at a crossroads because throughout the world no one has the answer to the amount of care, the quality of care, the accessibility of care, and certainly, no one has the answer to who is going to pay the final bill. I will also tell you from an economic point of view, medicine's problems are not all bad. Medicine as an industry employs millions of people. It provides employment at all levels of skill and expertise. It provides excellent working condi-



tions, and it provides a reasonable pay for a reasonable day's work. I ask you, are these not the things that the economy has been looking for? And yet, most people feel that the health care field is in serious trouble.

What kind of problems do we see in the health care field? In Oklahoma, we have just seen the Department of Human Services and their health care system in shambles, facing a deficit of over 100 million dollars, and the governor and the legislature are still going with a provider's fee. Thankfully your Oklahoma State Medical Association was able to successfully remove physicians from this provider tax and now, as most of you know, pharmacists in many

hospitals are having second thoughts about this provider tax on sick people. I have second thoughts because I am fearful that the Federal Treasury, once it has decided that it is not going to be raided any more, will stop payments to the State of Oklahoma and other states, and those people who are provider taxed will simply have that tax increased to meet the needs. Perhaps, it will go back to the legislature, or perhaps it will go to a vote

of the people; most likely, I feel it will not.

The bottom line is that as physicians, regardless of what the legislature does or the Congress does, we must take care of people who are sick. It makes no difference about their insurance or their ability to pay; we have responsibility as professionals to care for those who need help!

What about at the national level? Yes, we see turmoil there. We see the problem of the uninsured; we see the problem of access, even with those who have insurance; we see the problems of being able to move insurance from one job to another; and at the federal level, we see an ever increasing amount of money that is required to fund health programs.

Your American Medical Association has met part of this challenge by producing the Health Access America Plan to provide access to health care for all Americans, and this from a physician's perspective. What about on the world level?

It has openly been suggested that we go to the "Canadian System." This is a system which has in itself been in turmoil. Physicians have fled Canada, and currently there is a great disagreement over reimbursement. I think no one would disagree with the fact that there is rationing of health care, even if it is simply because of non-availability or lack of medical technology. An example, of course, would be the MRI or the CT scan. A single major city in the United

States would have more CT scanners than are available in the entire Canadian medical system.

The problem with all of this is that too often we talk about things, ways, means, efforts, and all too often we forget the whos—the individuals who are in need of care, the individuals who are in need of access. We, as physicians, must never forget why we became physicians. We will, all too often, find that we must be advocates for our patients if they are going to receive care and access, especially if we are going to develop a system of medical care that will meet the needs of the patient, of the physician, and of the nation, and a system which we as a nation can pay for.

We have spent the last several months working with Medicare. Medicare is a flawed system. We have worked with RBRVS; we have worked with new payment systems and new visit codes. We, the physicians, have made the transition very well. In Oklahoma, your Oklahoma State Medical Association has worked diligently and has been successful in obtaining a single reimbursement zone for the State of Oklahoma, but in the end, the Medicare system is flawed. It needs to be reworked, and it needs to be reworked completely.

Not only do we have a problem with the Medicare system, we have problems with the legal system. We have a problem with liability, and we have problems with tort reform. For many years, medicine stood alone and shouldered the responsibility of liability based not on the merits of the case, but on the availability of large dollars for medical malpractice insurance. The country now begins to reel as product liability, organizations, injuries, playgrounds, stores, foods, and almost anything you can name, is being hit by someone with the hopes of striking it rich. How long has it been since you saw mobiles on the playgrounds? How long will it be before the swings are gone? Another flawed system. A system that needs to be

***"Oklahoma physicians, you and I often do not realize how lucky we are to be practicing in the State of Oklahoma."***

revised, corrected, and again, from the ground up. In Oklahoma, we have been fortunate with the foresight of your state medical association to have both a liability and a health insurance program that is second to none anywhere.

Oklahoma physicians, you and I often do not realize how lucky we are to be practicing in the State of Oklahoma. We practice in a state where the restrictions are very limited, we practice in a state where there is no mandatory assignment, and we practice in a state in which much of the Old West's honor and trustworthiness still exists. We practice in a state where for the most part a man's word and a



Dr Funnell

handshake turns out to be exactly what he said it was going to be. Unfortunately, we also practice in a state where the need for care is great. During this year, I am going to work diligently with the county medical societies and with your state medical association to do all that we can do to provide a means of access and at the same time to try to develop a plan to provide ongoing care for our indigent patients, for our welfare patients, for our Medicare patients, and just for those patients who need to find access into the medical community for care. We have great physicians! We can find a way! I am challenging all of us in the State of Oklahoma to help find a way and help provide care for those people in need.

And now in closing, I want to repeat that it is a singular honor to be chosen as your president. It is an equal honor to follow a man who has been one of my lifelong friends. I can also tell you that I am going to call frequently and firmly on our partners in medicine, the auxiliaries. I thank Susan Paddock for the job she has done and look forward to working with Judy Critchfield. Likewise, I am going to ask them to ask us when we can be of assistance to them. I particularly want to recognize Sherry Strebel, who could not be with us today because she is attending the graduation of her daughter, Susan, in Washington, DC. Sherry, as you know, was the national American Medical Association Auxiliary president. What great work she has done to bring honor and recognition to our state, to the auxiliaries, and to medicine in general. Thank you, Sherry, and I wish you were here! Also, I want to serve notice to the professional staff at the Oklahoma State Medical Association. We are going to be doing lots of things together, so sign in on your computer keyboard and keep it open! It is truly delightful for me to be here today and I thank you for all allowing me to speak this morning. J

In an effort to reduce costs, the JOURNAL will no longer publish the complete proceedings of the Annual Meeting of the OSMA House of Delegates. Readers may obtain a copy of the minutes from the meeting by contacting OSMA headquarters.

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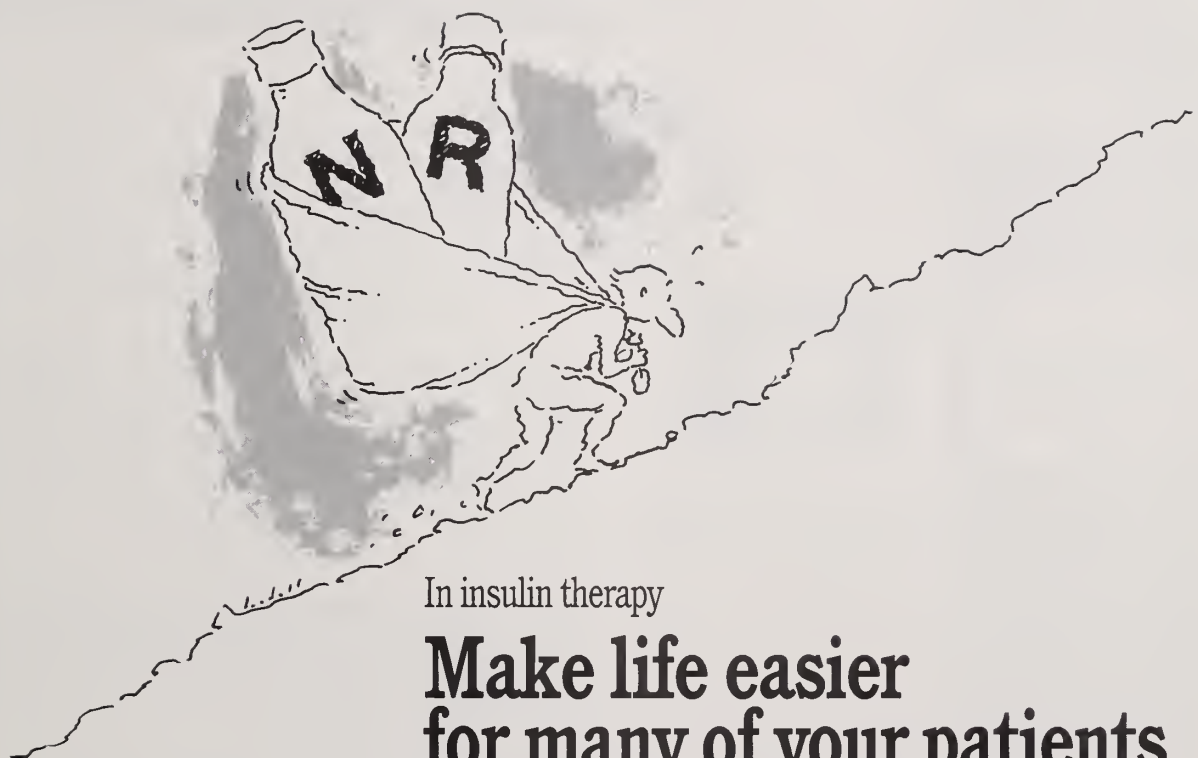
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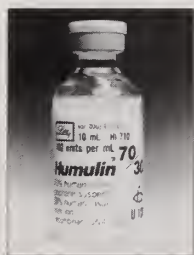
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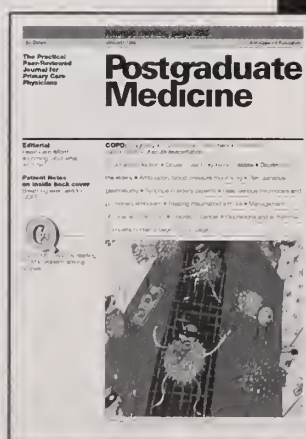


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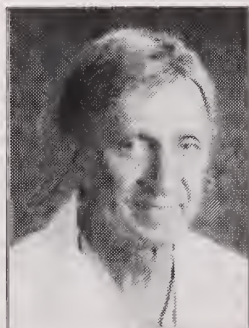
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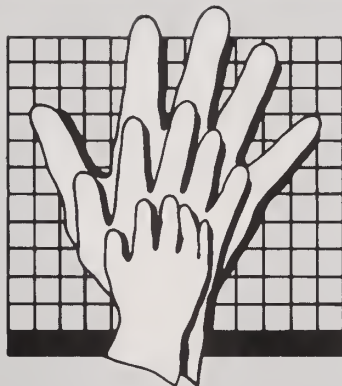
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### Style

All manuscripts should adhere to the style adopted by the American Medical Association as illustrated in *JAMA* and detailed in the AMA's *Manual of Style*. An abstract of 150 words or less should accompany each paper and should state (1) the exact question considered, (2) the key points of methodology and success of execution, (3) the key findings, and (4) the conclusion(s) directly supported by these findings. Footnotes, bibliographies, and legends for illustrations should be typewritten, double-spaced, on separate sheets. References are to be listed in the order of their appearance in the article.

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### News

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■ **Harold L. Brooks, MD**, senior associate dean for clinical programs at the Medical College of Wisconsin, Milwaukee, has been named dean of the University of Oklahoma College of Medicine-Tulsa by the OU Board of Regents. The appointment is effective October 1, 1992. Dr Brooks will also hold the title of professor of medicine at the Tulsa campus.

Dr Brooks earned his MD degree at OU in 1963 and interned at University Hospitals and Clinics in 1963-1964. He completed his residency in medicine and fellowship in clinical cardiology at the University of Texas-Southwestern, and a three-year research fellowship in cardiology at Harvard University. He currently holds the Northwestern Mutual Endowed Chair in Cardiology and is professor of medicine and pharmacology at the Medical College of Wisconsin. His prior academic faculty appointments included posts at Harvard Medical School and the University of Chicago Pritzker School of Medicine.

■ **Oklahoma City physician R. Murali Krishna, MD**, has been named to receive the 1992 Exemplary Psychiatrist Award by the National Alliance for the Mentally Ill (NAMI), an advocacy group supporting the rights of the mentally ill. The award is presented annually to psychiatrists across the country who have demonstrated dedication to the care of the mentally ill and support for family members, and who take an active role in NAMI's grassroots advocacy movement. Dr Krishna is a founding member and executive director of SHARE Psychiatric Day Treatment Center. He also serves as medical director of St. Anthony Hospital Psychiatric Department and Mental Health Center, and is clinical professor of psychiatry and behavioral sciences at the University of Oklahoma Medical School. He was president of the Oklahoma Psychiatric Association from 1989 to 1990.

■ **Eighty-four percent of US physicians think** the threat of malpractice suits causes them to do tests they otherwise might consider unnecessary, according to an AMA-sponsored Gallup survey of physicians. Of those who said they practiced defensive medicine, three-fifths or 61% believed the additional tests added significantly to the cost of care they provide. Half of physicians (51%) think injured patients should be compensated through a no-fault

system, while 40% think injured patients should be required to prove the provider was at fault. In a separate survey, the majority of members of the public said that the number of malpractice suits against physicians is not justified (63%), that awards are usually too high (55%), and that a ceiling should be set on pain and suffering awards (71%). Copies of "Physician and Public Opinion on Health Care Issues 1992" may be purchased by calling 1-800-621-8335. Executive summaries will be mailed to state medical associations, national medical specialty societies, and large county societies.

■ **The Laureate Psychiatric Clinic and Hospital** will present "Depression: Phenomenology, Etiology and Treatment" October 8-9, 1992, at its conference center, 6655 South Yale Avenue in Tulsa. Cost will be \$75 a day or \$150 for the conference. For more information or reservations call 1-800-322-5173, ext. 4094.

■ **Jess Hensley, MD, Claremore, is being honored** for his contributions to Oklahoma pathology with a special lecture series to be established in his name. Now a Life Member of the OSMA, Dr Hensley was a leading pathologist in Oklahoma for many years and is a former chairman of the University of Oklahoma Health Sciences Center pathology department. The department's renovated library will be officially renamed the Jess Hensley Pathology Library.

■ **The fourth edition of the ABMS *Directory of Certified Medical Specialists*** will be published in October 1992 and will replace the *ABMS Compendium*. The directory is the official directory of the American Board of Medical Specialties and lists all the board certified specialists in the United States, Canada, and foreign countries. The fourth edition will contain more than 425,000 listings. A supplement will be published in 1993 to include the names of all diplomates certified after the directory goes to press. Prepublication orders can be placed through the ABMS, One Rotary Center, Suite 805, Evanston, IL 60201, for \$295 (plus shipping) before October 1, 1992. After that date the price will be \$325. The price includes both the directory and the 1993 supplement.

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**Contraindications:** Severe LV dysfunction (see **Warnings**), hypotension (systolic pressure < 90 mm Hg) or cardiogenic shock, sick sinus syndrome (if no pacemaker is present), 2nd- or 3rd-degree AV block (if no pacemaker is present), atrial flutter/fibrillation with an accessory bypass tract (eg, WPW or LGL syndromes), hypersensitivity to verapamil.

**Warnings:** Verapamil should be avoided in patients with severe LV dysfunction (eg, ejection fraction < 30%) or moderate to severe symptoms of cardiac failure and in patients with any degree of ventricular dysfunction if they are receiving a beta-blocker. Control milder heart failure with optimum digitalization and/or diuretics before Calan SR is used. Verapamil may occasionally produce hypotension. Elevations of liver enzymes have been reported. Several cases have been demonstrated to be produced by verapamil. Periodic monitoring of liver function in patients on verapamil is prudent. Some patients with paroxysmal and/or chronic atrial flutter/fibrillation and an accessory AV pathway (eg, WPW or LGL syndromes) have developed an increased antegrade conduction across the accessory pathway bypassing the AV node, producing a very rapid ventricular response or ventricular fibrillation after receiving I.V. verapamil (or digitalis). Because of this risk, oral verapamil is contraindicated in such patients. AV block may occur (2nd- and 3rd-degree, 0.8%). Development of marked 1st-degree block or progression to 2nd- or 3rd-degree block requires reduction in dosage or, rarely, discontinuation and institution of appropriate therapy. Sinus bradycardia, 2nd-degree AV block, sinus arrest, pulmonary edema and/or severe hypotension were seen in some critically ill patients with hypertrophic cardiomyopathy who were treated with verapamil.

**Precautions:** Verapamil should be given cautiously to patients with impaired hepatic function (in severe dysfunction use about 30% of the normal dose) or impaired renal function, and patients should be monitored for abnormal prolongation of the PR interval or other signs of overdosage. Verapamil may decrease neuromuscular transmission in patients with Duchenne's muscular dystrophy and may prolong recovery from the neuromuscular blocking agent vecuronium. It may be necessary to decrease verapamil dosage in patients with attenuated neuromuscular transmission. Combined therapy with beta-adrenergic blockers and verapamil may result in additive negative effects on heart rate, atrioventricular conduction and/or cardiac contractility; there have been reports of excessive bradycardia and AV block, including complete heart block. The risks of such combined therapy may outweigh the benefits. The combination should be used only with caution and close monitoring. Decreased metoprolol and propranolol effect may occur when either drug is administered concomitantly with verapamil. A variable effect has been seen with combined use of atenolol. Chronic verapamil treatment can increase serum digoxin levels by 50% to 75% during the first week of therapy, which can result in digitalis toxicity. In patients with hepatic cirrhosis, verapamil may reduce total body clearance and extrarenal clearance of digoxin. The digoxin dose should be reduced when verapamil is given, and the patient carefully

monitored. Verapamil will usually have an additive effect in patients receiving blood-lowering agents. Disopyramide should not be given within 48 hours before or 24 hours after verapamil administration. Concomitant use of flecainide and verapamil may have additive effects on myocardial contractility, AV conduction, and repolarization. Combined verapamil and flecainide therapy in patients with hypertrophic cardiomyopathy should be avoided, since severe hypotension may result. Concomitant use of lithium and verapamil may result in a lower serum lithium levels or increased sensitivity to lithium. Patients receiving both drugs should be monitored carefully. Verapamil may increase carbamazepine concentrations during combination therapy. Verapamil may increase theophylline concentrations. Verapamil may increase serum levels of cyclosporin. Verapamil may inhibit the clearance of theophylline. Concomitant use of inhalation anesthetics and verapamil requires careful titration to avoid excessive cardiovascular depression. Verapamil potentiates the activity of neuromuscular blocking agents (curare-like and depolarizing). Reduction may be required. There was no evidence of a carcinogenic potential of verapamil administered to rats for 2 years. A study in rats did not suggest a tumorigenic potential of verapamil was not mutagenic in the Ames test. Pregnancy Category C. There are no data and well-controlled studies in pregnant women. This drug should be used during pregnancy only if clearly needed. Verapamil is excreted in breast milk; therefore, nursing should be discontinued during verapamil use.

**Adverse Reactions:** Constipation (7.3%), dizziness (3.3%), nausea (2.7%), hypotension (2.2%), edema (1.9%), CHF, pulmonary edema (1.8%), fatigue (1.7%), dyspnea (1.7%), bradycardia: HR < 50/min (1.4%), AV block: total 1°, 2°, 3° (1.2%), 2° and 3° (0.8%), flushing (0.6%), elevated liver enzymes, reversible non-obstructive paralytic ileus. The following reactions, reported in 1.0% or less of patients, occurred under conditions where a causal relationship is uncertain: angina pectoris, atrioventricular dissociation, chest pain, myocardial infarction, palpitations, purpura (vasculitis), syncope, diarrhea, dizziness, gastrointestinal distress, gingival hyperplasia, ecchymosis or bruising, cerebrovascular accident, equilibrium disorders, insomnia, muscle cramps, paresthesia, psychotic symptoms, shakiness, somnolence, arthralgia and rash, exanthema, hair loss, hyperkeratosis, sweating, urticaria, Stevens-Johnson syndrome, erythema multiforme, blurred vision, mastitis, galactorrhea/hyperprolactinemia, increased urination, spotty menstruation, impotence.

4/11/91 • P91

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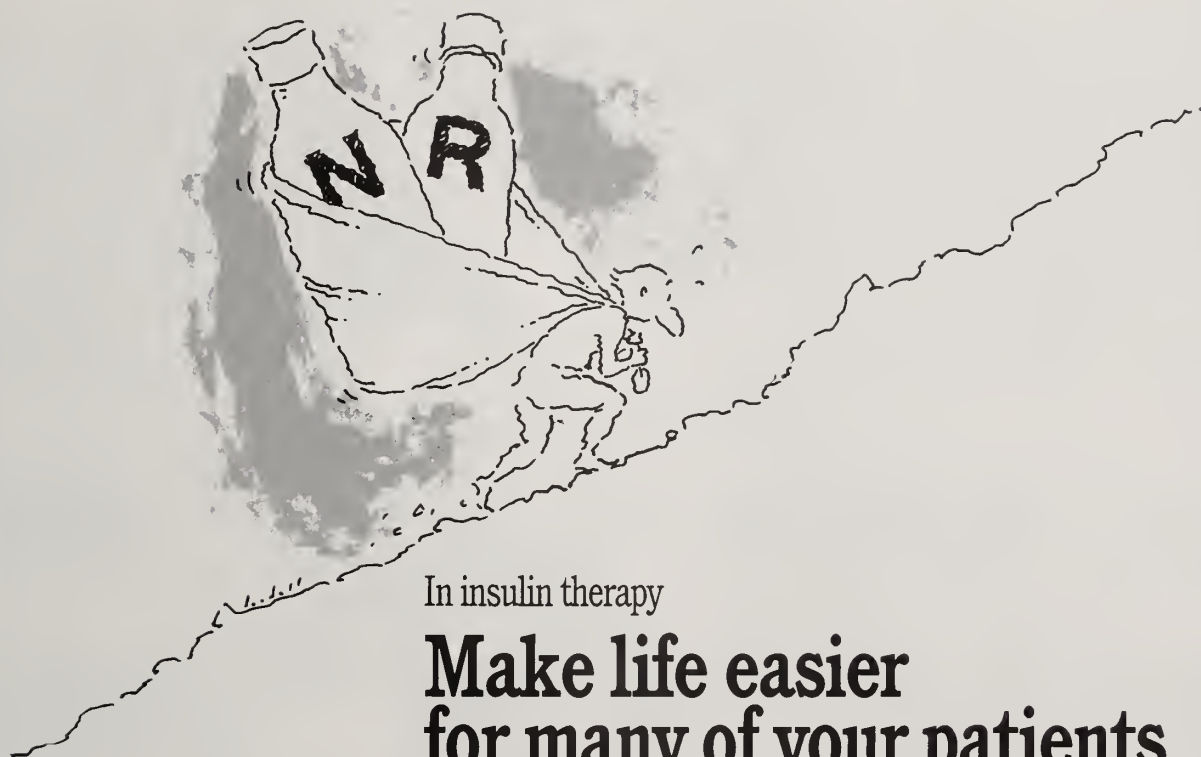
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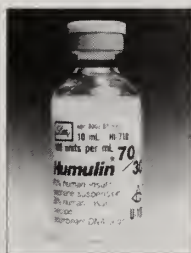
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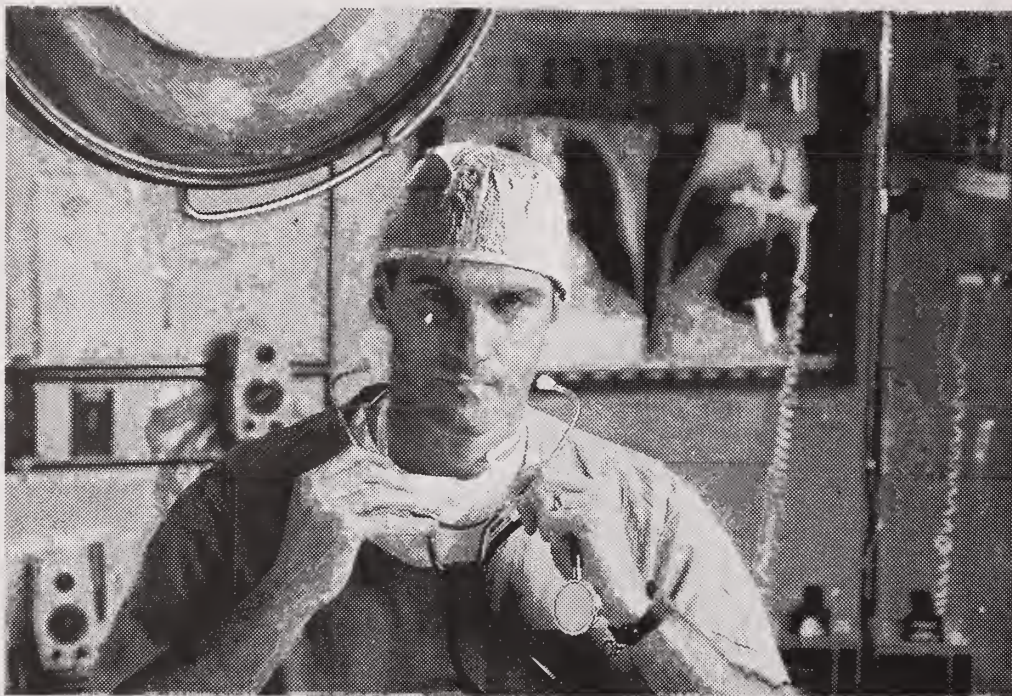


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## Doctor, Spare No Expense!

The only way to avoid growing old is to die young, and this alternative is unattractive. So the human survival instinct, with help from modern medical science, has produced a large number of elderly citizens in our society. Unfortunately, functional capability may cease long before the candle of life flickers out. Thus our society takes care of significant numbers of patients disabled by the ravages of arteriosclerosis, strokes, dementias, and neurological damage. A medical decision on intensity of treatment of these victims is sometimes most difficult, and the wisdom of Solomon may be required.

While the ethical physician may merely care for the dying, the family sometimes cannot accept the imminent death of their loved one. The physician giving medical care to a severely disabled patient is sometimes beset with the family's unfinished emotional problems, and may be pressured to be active in an inappropriate therapy. The physician's principal resource in this dilemma is a personal knowledge of the patient's philosophy on terminal medical care, and in circumstances where this information is not known a hightension quandary may ensue.

The Oklahoma Legislature recently enacted a significant improvement in Oklahoma's statutes on advance directives to physicians for terminal medical care, or "living wills." After a concerted legislative effort by the Oklahoma State Medical Association, the Oklahoma Bar Association, and citizens' groups representing the elderly, Oklahoma's inept advance

directive law was replaced by a broader and improved statute. The governor has signed it.

To become effective September 1, this improved law offers a way to contain the uncertainty of the terminal care dilemma. The new law as written is complex, but the range of problems addressed is also complex, and a good, rational advance directive requires some thoughtful choosing far in advance of the time of action.

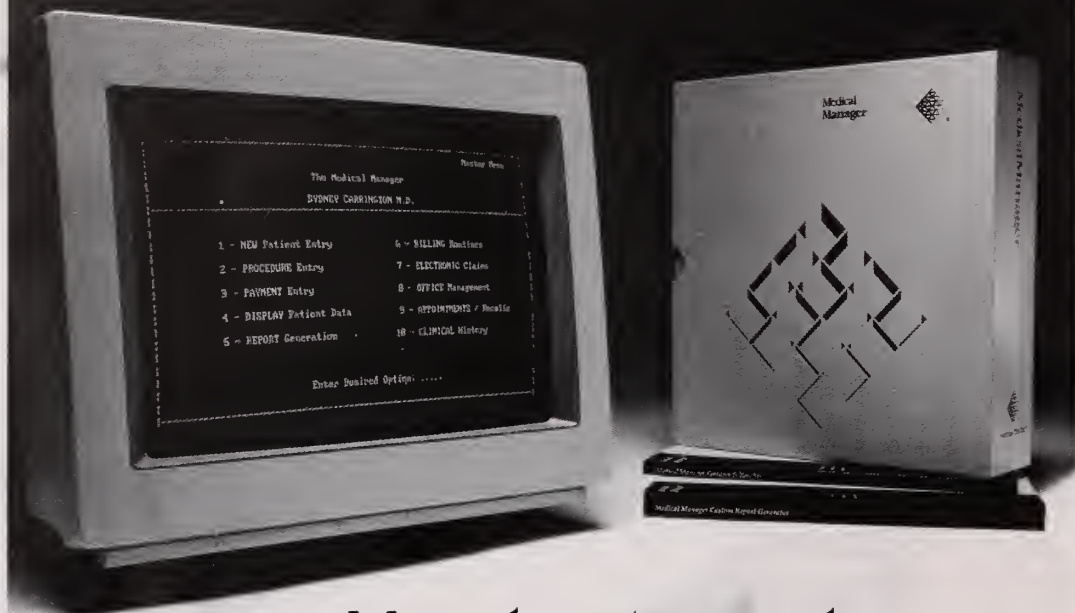
The new law will have scant effect on the current backlog of severely damaged patients. But its passage is a clarion call to the medical profession to eliminate future quandaries by discussing terminal care philosophy with currently healthy patients. Now we can incorporate into the medical record a reasonably clear-cut advance directive for the time of possible future troubles. In those trying circumstances when a family's grief and distress at an impending death preclude logical decisions, a new "living will" can be a major factor in executing the patient's wishes.

We physicians have been handed a new and useful tool; let us encourage Oklahoma patients to use it.

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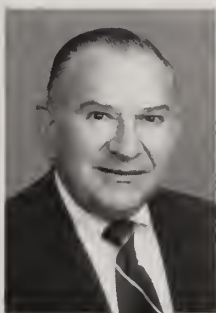
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## Life in the Windy City

Three cheers for our AMA delegates who journeyed from Oklahoma to the Windy City of Chicago, only to find the temperature down to 35°. Another three cheers for the AMA Auxiliary representatives. They were led by national AMAA President Sherry Strebel and served well as delegates and pages for the AMAA House of Delegates.



The pace for the Oklahoma delegation and also for your president was hectic. From the moment I arrived to attend the Organization of Medical Association Presidents to the end of the House of Delegates on Wednesday, we never rested. Your delegates worked alone as the Oklahoma caucus, as well as working together with the mid-America caucus (Arkansas, Kansas, Oklahoma, and Missouri). We also met every morning before the house sessions with the delegates from Kansas and worked with them to discuss reference committee reports, as well as issues on the House of Delegates agenda. The big issues, as usual, were RBRVS; AIDS, including physician and patient testing; access; single payor sys-

tems; universal health care; health care for the poor; and even the issue of whether physicians should post a price list of frequently performed procedures in their waiting rooms.

For the frightening reality of how Washington thinks, we attended a two-hour discussion on health access featuring Congressman "Pete" Stark for the Democratic Congress and Tom Scully, President Bush's man from the White House. This session reiterated that, even with their large staff and their advisors, the intricate details of health care, which seem so simplistic to us, are lost in Washington.

I want to give special thanks to each of the delegates, members of councils, Hospital Medical Staff Section, the young physician, the resident physician, and the representatives of boards and associations who went from Oklahoma to give representation to our state. I recognize the hardship it causes for each of these individuals to give up the time and a week of their lives to serve you and your association.

Again, with thanks,

A large, stylized handwritten signature in dark ink, appearing to read "Sherry Strebel M.D.", with a large loop at the end.

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# Complications Following Extracorporeal Shock Wave Lithotripsy: The Oklahoma Lithotripsy Center Experience

Donald D. Albers, MD; James R. Wendelken, MD; and Shelby D. Barnes, MD

The authors present the Oklahoma Lithotripsy Center experience of post-extracorporeal shock wave lithotripsy (ESWL) complications after reviewing all cases from November 1986 to July 1991. Complications were reported in 20.7% of 2,446 lithotripsies. Of the 506 complications, pain was the most common, followed by nausea and vomiting, and urinary tract infection. Less than 1% of patients treated required open surgery. There were no deaths or nephrectomies following lithotripsy in the study period. ESWL appears to be a safe way to manage urinary calculi.

Extracorporeal shock wave lithotripsy (ESWL) for urinary calculi was initiated in late 1986 in Oklahoma City. To date, the Oklahoma Lithotripsy Center (OLC) has performed over 2,900 lithotripsy treatments. Follow-up data is available on 2,446 treatments. Patients are contacted within a few days after treatment and by questionnaire at six weeks. The treating urologist is contacted by questionnaire in three months. These data are entered into the computer-stored data base on the return of questionnaires from patients and urologists for later study. Results of this retrospective study from November 1986 to July 1991 are presented. We are presenting our experiences with ESWL complications in order to emphasize the low morbidity with the procedure.

Complications were defined as pain requiring medication or hospitalization caused at times by stone fragments, nausea and vomiting, urinary tract

infections, and hematuria of more than three days' duration.

## Review of Data on Complications

Complications were reported in 506 (20.7%) of the 2,446 treatments (Fig 1). This figure is higher than in a previous communication from this center because of the inclusion of pain as a complication.<sup>1</sup>

Significant pain occurred in 284 of the 506 patients (Fig 1), 33% of whom were readmitted to the hospital following their outpatient therapy. Fifty-seven patients in the pain category (2%) post-ESWL required cystoscopy with basket removal or stent placement to remove retained ureteral fragments. Pain was usually resolved in 1 to 2 days. Twenty-

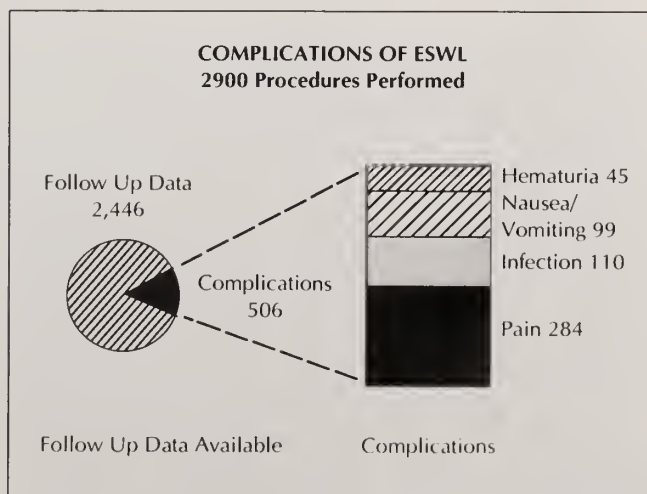


Figure 1. Complications of ESWL

Direct correspondence to Donald D. Albers, MD, Oklahoma Lithotripter Associates, Inc., 5501 N. Portland, Oklahoma City, OK 73112.

three patients (.9%) required open pyelolithotomy or ureterolithotomy. Two patients required partial nephrectomy.

Nausea and vomiting was a significant complication in 99 (4%) patients (Fig 1), and was associated with pain in 60 (2.4%). Ten (.4%) of the patients with nausea and vomiting had significant stone fragments remaining requiring further management, making a total of 67 (2.7%) endoscopic procedures to remove stone fragments.

Urinary tract infections occurred in 73 (3%) of the patients. Eleven patients (.5%) were treated for pyelonephritis. Twenty-six patients (1%) were diagnosed as having urosepsis. All the infections resolved with antimicrobial therapy.

Gross hematuria continuing three days or more occurred in 45 (2%) patients. Only two required blood transfusions (Table). Four patients had renal hematomas. No renal explorations were prompted by bleeding.

There were rare complications involving the cardiovascular system or post-anesthesia problems. One death occurred following cystoscopy and ureteral catheter insertion prior to lithotripsy. Our experience has not revealed any problem with hypertension either acutely or in our follow-up data.

## Discussion

Early reports of complications from lithotripsy include hemorrhage, obstruction by stone fragments, pain requiring treatment, and urinary tract infections.<sup>2</sup> Treatment with ESWL produces intra-parenchymal and perirenal hemorrhage that is related to stone size and number of shock waves administered.<sup>3</sup>

Detail of Complications Reported in 2,446 Patients		
<b>Pain</b>	284	12.00%
Hospitalized	167	7.00%
Associated with stone fragments	57	2.00%
Required open surgery	23	0.90%
Nausea and vomiting with pain	60	2.40%
<b>Nausea and Vomiting Total</b>	99	4.00%
<b>Urinary Infections</b>	110	5.00%
Pyelonephritis	11	0.50%
Sepsis	26	1.00%
Low-grade UTI	73	3.00%
<b>Hematuria</b>	45	2.00%
Blood transfusions	2	0.08%

The incidence of hypertension following lithotripsy was reported to be 8% by Williams et al.<sup>4</sup> However, Lingeman,<sup>5</sup> in 1990, reported the incidence of hypertension to be only 2.4%, while the controls were 4%. Our retrospective review has not shown hypertension to be significant.

The kidney subjected to ESWL experiences changes similar to those in other forms of renal trauma.<sup>6</sup> Renal tubular enzymes (bilirubin, lactic dehydrogenase, serum glutamic oxaloacetic transaminase, creatine phosphokinase, N-acetyl-b-glucosaminidase, galactosidase, and  $\gamma$ -glutamyl trans-peptidase) increase, but return to normal in seven days.<sup>6</sup> Cases of pancreatitis have been reported.<sup>3</sup>

The incidence of subcapsular or perirenal hematomas was .66% in one series, with only one patient requiring exploration.<sup>7</sup> Isolated cases of renal injury with hemorrhage requiring nephrectomy have been rarely reported.<sup>8</sup>

Obstruction of the ureter from multiple stone fragments (steinstrasse) occurs and requires additional management.<sup>9</sup> The treatment of steinstrasse includes ureteral stenting, endoscopic removal, and, very occasionally, open surgical intervention.

## Summary

In a focused review of our post-treatment complications from physician and patient follow-up information on 2,446 lithotripsy treatments, we found that following lithotripsy, one patient in five experienced some kind of complication.

Pain was the most prevalent complication and required hospitalization in about one-third of the 506 patients with complications. Stone fragments produced pain in 11% of those with pain as a complication. Twenty-three (5%) patients (less than 1% of the 2,446) required open surgery to remove impacted fragments. A total of 67 patients required endoscopic manipulation of fragments.

Hematuria (usual during treatment) lasted more than three days in 45 patients. Two patients required transfusions. No patients in this series required exploratory surgery or nephrectomy because of bleeding.

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# MRI of the Knee, a Review: Is There a Rationale?

William A. Grana, MD

The purpose of this paper is to review the literature with regard to available information about the value of magnetic resonance imaging for evaluation of knee pathology and to define indications for its use.

## Introduction

**Review of Physics of MRI.** Magnetic resonance imaging (MRI) is the latest remarkable technology with clinical application from radiologic medicine. MRI uses a principle of physics that states that atoms with an odd number of protons and neutrons have a net magnetic spin. The hydrogen atom which accounts for two-thirds of all atoms in the human body is ideal for use in MRI. Hydrogen atoms are randomly oriented within tissues and therefore ordinarily there is no net magnetic moment. That is, the magnetic electrical signal from a tissue is zero. However, when the body is placed in an external magnetic field, enough of the hydrogen atoms align themselves with the field to produce a net magnetic moment that can be manipulated. The net magnetic moment is proportional to the strength of the field. When a second magnetic field is applied in short duration or pulses, the hydrogen atom will deviate from its orientation, producing a rotation or wobble. This is measured as a magnetic signal with a receiver coil. Hydrogen ions, which give the greatest signal, are in free water, while the hydrogen ions in bound water or in macromolecules have much smaller signals. The

term *T1* refers to the time it takes the wobbling nuclei to return to their original alignment in the magnetic field, and *T2* is the time it takes the nuclei to become randomly oriented again.<sup>1</sup>

In MRI systems, combinations of pulse sequences are utilized to calculate the *T1* and *T2* values of the tissues. For a given pulse sequence, tissues will react with different signal intensities; these intensities are represented on images ranging from high intensity, which is white, to intermittent gray, or to no signal, black. With knowledge of the tissue composition, a pulse sequence that allows maximum contrast of the imaged structures is chosen.<sup>1</sup> In musculoskeletal tissues, *T1* images depict fat with a high signal intensity (white), while water has a lower intensity. *T1* images are useful in examining bone marrow, and tumors involving the marrow, as well as demonstrating anatomic detail of the soft tissues. On *T2* images, water and tumors all have a high signal intensity. These images are useful in demonstrating the extent of lesions that extend into the muscle. Cortical bone, tendons, and ligaments are void of signal on both *T1* and *T2* weighted images and thus appear black.<sup>1-5</sup>

MRI of the musculoskeletal system was at first felt to be of limited use because bone did not produce a signal. However, it became apparent that there were many orthopedic conditions in which MRI was useful despite the fact that cortical bone produces no signal. MR images have been used for demonstrating a variety of orthopedic conditions including infection, inflammation, osteonecrosis, osteochondritis dissecans, soft tissue tumors, degenerative spine condi-

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tions, joint abnormalities, ligament injuries, and tendon injuries. In particular, there has been great interest in the evaluation of disorders of the knee.

**Purpose.** MRI of the knee has become a high point of interest for radiologists and primary care physicians, as this technique is marketed from one to the other. A conclusion, widely accepted, is that MRI of the knee is "an extremely accurate means for non-invasive assessment of the integrity of the menisci, ligaments and tendons. It is the diagnostic procedure of choice when the clinical diagnosis is not straight forward."<sup>6</sup> The problem is in how one defines *extremely accurate* and who determines the *clinical diagnosis*. An important question that all physicians must answer for themselves is whether the next diagnostic test they order is cost-effective. The cost-effective use of a tool such as MRI requires a knowledge of what it can and cannot tell us.<sup>7-10</sup>

## MRI and Specific Disorders of the Knee

**Bone Marrow Abnormalities.** In bone marrow abnormalities, MRI is very sensitive in detecting the presence of fat in a tissue. Bone marrow cavities consist primarily of fat; therefore, any process that replaces this yellow marrow will be detected easily by the MRI. Diseases that consistently attack the marrow, such as the leukemias or other myeloproliferate disorders, will be readily visualized.<sup>1,11</sup>

**Bone Tumors.** The knee is the site of many adolescent and adult bone tumors and these can be a source of undetermined pain. In a patient with radiographic evidence of a tumor or with unexplained pain, an MR image may define the extent of the tumor, particularly any extension into the soft tissues as might occur in a malignant process. A bone scan, as a screening procedure before MRI and after plane radiographs, is an appropriate diagnostic sequence.<sup>1,11</sup>

**Soft Tissue Tumors.** MRI detects many soft tissue lesions because of their T2 characteristics as compared to the normal tissues. However, it is usually not possible to distinguish benign from malignant conditions, although some signs that favor malignancy include indistinct margins, nonheterogeneity of the lesion, and extension into adjacent structures. The knee and especially the popliteal region are a common site for mass lesions, and the MRI is the best method currently available to define such a lesion.<sup>1,11</sup>

**Infection.** Radionucleotide scans have been the mainstay in the evaluation of infection of joints and bone. MR images will show the presence of bone infection and its spread to adjacent soft tissues. MRI

is probably more sensitive than bone scans in the detection of the early changes of infection. Combined with early aspiration of fluid for culture it may be the best diagnostic test available for bone or joint infection about the knee.<sup>1,11</sup>

**Osteonecrosis.** The most sensitive diagnostic test for the identification of osteonecrosis is MRI. Until recently, bone scan was considered the most sensitive way to evaluate this process. However, in the presence of unidentified pain, MRI of the knee is the procedure of choice. MRI is more sensitive in detecting the early changes of avascular necrosis.<sup>1,11,12</sup>

**Osteochondritis Dissecans.** MRI has been advocated as an accurate method of preoperative staging for osteochondral lesions in the knee. The treatment of osteochondritis dissecans and other osteochondral lesions depends upon the stability of the lesion and its potential for healing. Stage I lesions identified by MRI are generally felt to require no surgical treatment. Stage II lesions are stable and have an intact overlying articular cartilage. Stage III lesions are unstable and may require fixation in order to maximize the chance of healing. Stage IV lesions may occasionally be placed and fixed but usually require removal and debridement of the bony bed.

MRI is most useful in its ability to assess the stability of the lesion and distinguish between Stage II and Stage III lesions. In Stage II lesions, management can usually be accomplished by arthroscopic technique alone, and in Stage III lesions, which require fixation of the unstable fragment, a partially open technique may be necessary. It is useful to know this prior to entering the operating room. MR images are accurate for the preoperative staging of osteochondral lesions of the knee and enable the physician to determine the need for surgery and also the type of procedure most likely required.<sup>1,11-13</sup>

**Meniscus Abnormality.** MR images of the menisci are homogeneously dark without an internal signal. Degeneration of the meniscus will result in internal changes of increased signal. Cruess, Jackson, and others have proposed and used a grading system of intrameniscal signal.<sup>1,2,11,14,15</sup> A Grade I signal is of any size or intensity, usually globular in shape, but does not extend to an articular surface. A Grade II signal is linear and also does not extend to an articular surface. A Grade III signal clearly extends to an articular surface; this is a clinically significant tear that usually requires arthroscopic treatment. With use of such a grading system, Jackson indicated an accuracy of 93.1% in the diagnosis of medial meniscal tears and 96.6% in the diagnosis of lateral meniscal



tears. He noted the added value of MRI in defining problems associated with meniscal pathology such as osteochondral defects and popliteal or meniscal cysts.<sup>2</sup>

The results of the evaluation of meniscal pathology with MRI seem to fall into two groups. Those who are proponents of this application and those who are cautious in its use. To evaluate the results of these studies, some epidemiologic terms must be defined. *Sensitivity* is a rate of the number of true positives over the number of true positives plus the number of false negatives. The *specificity* is a rate of the number of true negatives over the number of true negatives plus the number of false positives. The *positive predictive value* (PPV) is the number of true positives over the number of true positives plus the number of false positives. The *negative predictive value* (NPV) is the number of true negatives over the number of true negatives plus the number of false negatives.<sup>16</sup>

The proponents of MRI believe that by using a combination of surface coils and thin section high resolution scanning technique, they are able to depict anatomic detail of the knee that correlates well with

that seen in cadaveric knees.<sup>3,5,11,14,15</sup> These studies indicate that in conjunction with clinical evaluation of knee pathology, MRI is the best way to define meniscal pathology. In addition, a number of these articles indicate that as MRI becomes more popular, costs will decrease, allowing MRI to become more cost effective. However, the accuracy ranges from 65% to 95% depending upon the study. Overall sensitivity for meniscal pathology varied from 81% to 91% and overall specificity from 57% to 96.6%. The NPV varied from 86% to 98.8%, while the PPV varied from 65% to 90.3%.<sup>2,4,5,17-20</sup> Lateral meniscal pathology provided the greatest difficulty. There were pitfalls in the confusion of normal anatomy with meniscal tear on the lateral side.<sup>21</sup>

The table summarizes clinical articles that evaluate MRI and meniscal pathology. Another conclusion, from those recommending caution, is that MRI is a useful tool for the clinician in the diagnosis of intra-articular problems of the knee. However, its use as a routine diagnostic modality is not recommended due to its relatively high cost and the fact

MRI Evaluation of Meniscal Pathology

Study	Accuracy			Sensitivity			Specificity			Negative Pred Value (NPV)			Positive Pred Value (PPV)		
	Overall	Medial	Lateral	Overall	Medial	Lateral	Overall	Medial	Lateral	Overall	Medial	Lateral	Overall	Medial	Lateral
Mandelbaum, et al <i>Am J Sports Med</i>	90.5%	90%	91%	85%	95.7%	75%	88.4%	81.8%	95%	93.6%	93.1%	94%	84.1%	88.2%	80%
Jackson, et al <i>Am J Sports Med</i>	94.9%	93.1%	96.6%	91.1%	97.6%	84.6%	93.9%	89.1%	98.7%	97.5%	97.6%	97.3%	90.3%	88.9%	91.3%
Fischer, et al <i>J Bone Joint Surg</i>	88.5%	89%	88%	81%	93%	69%	89%	84%	94%	92%	92%	92%	81%	86%	76%
Glashow, et al <i>J Bone Joint Surg</i>	85%	77%	93%	82.5%	72%	93%	82.5%	71%	94%	86%	79%	97%	77.5%	68%	87%
Polly, et al <i>J Bone Joint Surg</i>	94%	98%	90%	83.4%	100%	66.7%	96.6%	98%	95.1%	98.8%	100%	97.5%	85.7%	96.3%	75%
Mink, et al <i>Radiology</i>	93%	94%	92%	95%	97%	92%	91%	89%	91%	—	—	—	—	—	—
Barronian, et al <i>Arthroscopy</i>	78%	—	—	88%	—	—	72%	—	—	91%	—	—	65%	—	—
Raunest, et al <i>J Bone Joint Surg</i>	72%	—	—	88%	94%	78%	57%	37%	69%	—	—	—	—	—	—
Silva, et al <i>J Bone Joint Surg</i>	65%	—	—	—	—	—	—	—	—	—	—	—	—	—	—



that it does not offer anything in the way of treatment.<sup>7,9,22,23</sup> Much of the results of the use of MRI remind us of the way arthrograms were once touted as the best way to evaluate pathology of the knee.<sup>21</sup>

Kriegsman, in a study of MRI of the knee, points out that while sensitivity and specificity are stable properties of a diagnostic test and are not influenced by relative proportions of normal and diseased cases, positive and negative predictive values will be affected by the prevalence of a specific disease in a specific setting and can fluctuate widely.<sup>8,9</sup> Therefore, clinicians who wish to understand the implications of a negative MRI finding for clinical decisions in their own practice must carefully screen the literature *for findings in a population similar to that which they see or from which they gather their own data to calculate the predictive value.* From an epidemiologic standpoint, rates from a study in another diagnostic center offer the clinician no assurance that these same rates will be seen in his own MRI facility; this is because the populations at risk differ, as do the interpretive skills of the radiologists.<sup>9</sup> Kriegsman notes that his results represent the reality faced daily by the clinician who must decide whether to proceed with an expensive diagnostic test. MRI cannot replace the clinical history, x-rays, chemistry studies, and physical examination by an orthopedic surgeon in making a primary clinical decision regarding the diagnosis and treatment of meniscal pathology.<sup>9,10</sup>

**Cruciate Injury.** The cruciate ligaments appear as solid, dark, or low intensity bands and vary in thickness. The anterior cruciate ligament (ACL) is thinner on an MR image than the posterior cruciate ligament (PCL). The PCL is more easily depicted because it is thicker and often seen on more than one image. Tears are manifested by irregularity of the ligamentous structure, widening, and increased signal and discontinuity. In the case of the ACL, a mass representing the torn ligament and an associated hematoma is often found near the femoral attachment. In a chronic injury, the ACL is frequently absent while the PCL is often shortened towards the tibial side.<sup>2,5,11</sup> For the diagnosis of cruciate injury by MRI, accuracy varied from 15% to 100%, sensitivity 61% to 100%, and specificity 82% to 100%. For PCL injury, MRI was highly accurate, and in the combined ACL/PCL injury MRI is of value in preoperative planning.<sup>2,5,7,17,18,24</sup>

MRI has proved useful in the diagnosis of occult osseous and chondral lesions at the time of ACL rupture. The diagnosis of "bone bruises" as documentation of the severity of injury are helpful with MRI.<sup>25</sup>

**Patellofemoral Problems.** The use of "dynamic" patellofemoral testing with MRI has been recommended. However, this test is not truly dynamic and does not take into consideration the effect of muscles and actual motion of the knee, which can be done with arthroscopy.<sup>26</sup> Therefore, this form of testing will have the same limitations as multiple plane radiographic views of the knee or computerized tomography (CT) of the patellofemoral joint at multiple joint angles. To an experienced clinician, the latter tests provide the same information at far less cost.

**Articular Surface Lesions.** Most disappointing is the inability of MRI to predict articular surface chondromalacia, particularly of the patella. With its sensitivity to water content, one would expect that chondromalacia of the patella should be easily predicted. However, the results to date have been disappointing, and therefore, MRI cannot be recommended as a way to evaluate these problems.<sup>9</sup>

**Acute Injury of the Knee.** One favored and recommended use of MRI has been the evaluation of acute knee injury. Data from MRI studies indicate that meniscal tears are overdiagnosed and complete ligament tears underdiagnosed by clinical examination.<sup>6</sup> Therefore, this would seem to indicate that MRI is a cost-effective way to evaluate these problems. In a recent prospective study, Boden examined an assessment of the cost effectiveness of MRI in the evaluation of acute knee injury. He calculated that, based on the average regional medical costs, diagnostic arthroscopy is more cost effective than MRI and arthroscopy alone would be more cost effective. His conclusion was that to provide a cost benefit framework, it would be beneficial to develop objective criteria by which MRI can be used in the most cost-effective manner.<sup>10</sup>

## Discussion

It seems clear that for certain problems of the knee, MRI is an effective way to evaluate the problem. Specifically, bone marrow abnormalities, bone tumors, soft tissue tumors, infection, osteonecrosis, and osteochondrosis dissecans are best evaluated by MRI. It appears that, in the right hands, and with the appropriate clinical expertise, MRI can be a valuable tool in the evaluation of these problems. Of course, there has to be an appropriate history, physical examination, and plane radiographic evaluation to provide the indication to order this expensive test. On the other hand, there seems to be controversy about the value of MRI in the evaluation of acute knee injury, meniscal abnormality, anterior cruciate liga-

ment injury, patellofemoral problems, and articular surface injury.

There is said to be a high degree of negative predictive value for meniscal pathology when an MRI scan is done.<sup>16</sup> However, in order to have the full value of this remarkable technology, clinicians must evaluate the creditability of their own facilities and radiologic experts. Clinicians who wish to understand the application of a negative MRI finding for clinical decision making in their own practices must either carefully screen the literature for findings in a population similar to the one they see or gather their own data from which to calculate predictive values.<sup>8</sup> The NPV depends on the prevalence of meniscal pathology in the general population at risk. If prevalence is low, then the NPV is highly valid. If one does not know the prevalence in populations to be compared, then the results of one study are not valid for another population. The results of Kriegsman's and other studies represent the reality faced daily by the clinician who must decide whether to proceed with an expensive diagnostic procedure.<sup>7,9,10</sup>

Common sense tells us that a test is rarely indicated if the treatment will not be affected by the result, no matter what the result might be. If it is clear that arthroscopy of the knee is indicated because of the severity and duration of a patient's symptoms, why order MRI? Moreover, a positive finding with MRI may not reveal the real cause of a patient's symptoms since the denominator of asymptomatic patients is not known.<sup>27</sup> For example, Boden et al showed that 8% of asymptomatic patients had a herniated cervical disc, and 21% to 36% had a herniated lumbar disc on MRI scans.<sup>28-30</sup> More specifically from this review, a negative predictive value for the diagnosis of a torn meniscus of the knee may vary from 79% to 100%. This means that 21% of the time a negative finding may hide the presence of a torn meniscus. The primary care physician may do well, in many circumstances, to get an orthopedic consult before ordering MRI, especially for the acutely injured knee. □

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# Medical Treatment, Advance Directives, and Oklahoma Law

Harvey J. Blumenthal, MD

Advanced medical technology has allowed us to prolong life, and too often only the dying process, beyond wisdom and compassion. Because end of life medical decisions are increasingly being assumed by courts and the legal process, this report calls for public policy in Oklahoma to place the decision making of legitimate medical treatment where it properly belongs—in the hands of the patient, family, and physician.

On December 1, 1991, the Patient's Self-Determination Act became national law, requiring hospitals and physicians to develop and implement policies and educational programs about advance directives regarding health care. This law further requires that written materials must be furnished to the patients and their families upon hospital admission, using plain and simple language. It is hoped this will encourage them to determine in advance if they wish extraordinary measures such as nutrition and hydration treatments if the prognosis, such as a persistent vegetative state, becomes hopeless. The complexities of complying with the law are only now

*Related articles, pp 385 and 394.*

unfolding, and some of the national laws may be in conflict with Oklahoma state law.

On March 6, 1991, Governor David Walters established the Governor's Task Force on Bioethics, charged with the task of studying problems of death and dying, and making recommendations to broaden

Oklahoma's existing laws regarding the foregoing of "life support." Comments on current Oklahoma law with regard to foregoing life-sustaining treatments, problems with the current law, and legislative options are discussed in an accompanying report by Maraguerite A. Chapman, JD, LL.M., and Elise Dunitz Brennan, JD.

Proposed legislation, drafted by the governor's Bioethics Task Force, was entitled "Oklahoma Rights of The Terminally Ill or Permanently Unconscious Act." The very wording of the drafted bill, ie, *Permanently Unconscious Act*, immediately puts the neurologist in the vanguard of activity now attempting to deal with these difficult life and death issues. Therefore, I was asked by Claudia Kamas, an associate director of the Oklahoma State Medical Association, to testify before the Judiciary Committee of the Oklahoma House of Representatives on October 9, 1991, when the committee heard testimony from physicians, clergy, legal scholars, and several interested Oklahoma citizens, regarding the problems we face and possible solutions to these difficult end-of-life issues. Robert Melichar, MD, vascular surgeon from Tulsa, and I were the only two physicians who participated.

Much of the following is abstracted from my testimony. We are all familiar with the widely reported Quinlan case and Cruzan case—these are now household words. These two young woman had devastating and irreversible brain damage, but lived for many years, and could have lived for decades in a hopeless state of neither life nor death. Their exist-

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ence was extended by machines and tubes and artificial nutrition and hydration.

Because of the dominance of permanent neurological damage as the focal point in questions about termination of treatment, neurologists are consulted almost daily, not only to assist in medical treatment of the illness, but to give opinion on prognosis and to consult with the family. I spend many hours every week explaining to the family the nature of an illness, defining the brain damage, and helping them make treatment decisions with moral and ethical implications. I attempted to impress upon the Judiciary Committee how difficult this is. Most often, the prognosis is not immediately clear, and I tell the family exactly that, and that we are administering every medical and nursing skill to give their loved one a fighting chance for recovery. After a suitable period of time, the prognosis becomes more clear—whether or not the patient will make a reasonable neurological recovery. How long a period of time depends upon many factors, including the nature of the illness, the patient's age and preexisting and complicating conditions. Sometimes, after many weeks and months of administering very intensive treatment, we wish we hadn't. I impressed upon the committee how much more difficult it is to cease these measures once established, compared to never initiating these extraordinary treatments in the first place. However, these are medical treatments, and any medical treatment which provides no benefit to the patient may ethically be discontinued.<sup>1</sup>

What has happened is that we now have a runaway technology that has assumed a life of its own; our ability to prolong life, and many times prolong only the dying process, has exceeded our wisdom, our common sense, our common decency.

Now, there has developed a conflict of authority. Decisions that once were solely in the hands of the patient, the family, and physician have been assumed by the courts and by growth of the public interest in matters once generally regarded as private and confidential.<sup>2</sup> There is legitimate interest of the public and government and the courts in these sensitive medical ethical issues, but medical ethics are ultimately derived by practicing physicians, experienced physicians. They are not determined by scholars in ivory towers or judges in the courtroom—men and women who have never been at the bedside.<sup>3</sup> We practicing physicians have a hallowed tradition of ethical behavior that has formed the basis of our professional identity since the days of Hippocrates.<sup>4</sup>

Nevertheless, these vexing ethical issues cannot

be resolved solely within our profession. There is an increasing consensus of need for public policy to legitimize these changes of treatment standards which have been thrust upon us by the new technology and the new body of knowledge as we have gained experience in understanding which patients this remarkable technology can help and which are beyond medical help.

Now, public policy is being developed, stimulated by court decisions such as the Brophy case and Cruzan case. As Ron Cranford, MD, a well-known leader in neuro-ethics, has stated, "Each (of these cases) is like a brick in a foundation."<sup>5</sup> And I believe that foundation will be strengthened by HB 1893.<sup>6</sup> The legislature will be doing a responsible and needed service to the citizens of Oklahoma by passage of this bill and placing the decision making of legitimate medical treatment where it properly belongs—in the hands of the patient, the family, and physician.

Last, I entered into my testimony the American Academy of Neurology's resolution on legislation regarding durable power of attorney for health care. "The Academy encourages and supports states to enact laws to assure that future choices between medically acceptable treatment options are made consistent with the individual's previously articulated desires and thereby avoid conflicts detrimental to optimal medical care. Such laws allow two actions: First, the delineation of exact and particular wishes. And second, designation of a specific representative or proxy who will have responsibility for making decisions consistent with the beliefs and values of the patient in the event that the specific instructions are not applicable to the situation or leave doubt as to the actual wishes of the patient. This type of legislation has particular relevance for neurology since persons with impairments of consciousness, cognition, or communication may not be able to designate their wishes at the time major medical decisions must be made. Therefore, be it resolved that the American Academy of Neurology endorses the concept of legislation that enables the appointment of a durable attorney or proxy for health care decisions, and encourages its members to share in this endorsement to support the development and enactment of such laws and educate patients in the use of such a legal device when available in their state."<sup>7</sup>

## Case Reports

**Case 1.** A 52-year-old man was brought to the emergency room because of dyspnea and pneumonia. He consulted me two years earlier for progressive

weakness of the bulbar muscles, and a diagnosis of motor neuron disease was made. He refused to come for further treatment and management, but I did speak to his wife several times on the telephone over the next two years. He worked as a truck driver until a year before admission, when he had to quit because of progressive weakness. A year before admission he lost his ability to speak, and in the three months before admission he had increasing difficulty swallowing and required blenderized food. There was a 75-pound weight loss in the past year. The patient had no loss of intellectual function and had good understanding of his disease from our discussion at his visits two years earlier. He subscribed to the monthly *ALS Newsletter* and frequently had discussed his condition with his wife and son. He had drawn up a "living will" and as his respiratory insufficiency progressed, he and his wife agreed they wished no extraordinary measures to prolong his dying. He specifically requested that no life-support respirator or tracheostomy be used. Dyspnea increased, he had difficulty coughing up his secretions, and he was brought to the emergency room. He was treated with IPPB and morphine for the dyspnea. He agreed to intravenous fluids because of thirst. I had a thorough discussion of his condition with the patient and his wife, and we mutually agreed no antibiotics would be given. Morphine relieved his dyspnea substantially, but the patient soon became hypercapnic and stuporous. Respirations were feeble; he was stuporous and in no apparent discomfort. He died on the seventh hospital day.

Three months later, I received a letter from the patient's wife:

Dear Dr Blumenthal:

There is no monies (sic) can pay for the care you gave my husband, nor the comfort, and confidence to me, because of your care and caring. Thanks, also seems a small word considering all you gave of yourself. May God walk with you in all you do, and bless you beautifully.

With great affection...

**Case 2.** A 71-year-old man was admitted because of progressive angina and dyspnea. He was found to have severe occlusive coronary artery disease, and coronary artery bypass surgery was performed. There were complications and multiple emboli were suspected. The patient required cardiac balloon pump postoperatively, and he did not awaken from the anesthesia. Focal seizures developed and were treated successfully with anticonvulsants. Computed brain

tomography demonstrated diffuse and severe cerebral cortical atrophy with multiple focal areas of ischemic infarction. Electroencephalogram found diffuse slowing without any seizure discharges after the seizures were controlled. Examination on the first post-operative day found the patient comatose without any spontaneous movement or activity and no response to deep pain. The pupils reacted weakly to light, and oculoccephalic reflex was intact, both indicating brain stem functioning. The patient remained in a deep coma, but he was weaned off the ventilator. There was no sign of improving level of consciousness and the patient died of respiratory arrest on the 10th post-operative day.

Before his fatal illness, the patient had been an intelligent and very active professional man, highly respected in his field. He had a large and close family with whom the attending physicians consulted daily and they expressed the patient's feelings about not wishing extraordinary death-prolonging measures at the end of life. Shortly after his death I received a letter from his family:

Dear Dr Blumenthal:

We wanted to thank you personally for your time, devotion, care and concern for our father in the past week. We felt it important to express to you our appreciation for the time you took in caring for him, and in your consultations with us. It was of great comfort to us all. Words cannot adequately expressed these feelings. Although we know your role in God's plan was not easy, we hope you can rejoice with us in the knowledge that he now resides in eternity with our Heavenly Father...

**Case 3.** A 72-year-old lady was admitted after an acute episode of dizziness, dysarthric speech, left hemiparesis, and diminished responsiveness. There was a history of hypertension with blood pressure as high as 200/130, and she did not take medication on a regular basis. On admission blood pressure was 204/110. Cardiac rhythm was regular with apical pulse of 80. The patient was dysarthric, could state her name, and was oriented to place. She had vertical nystagmus and dysconjugate gaze and left hemiparesis with left facial weakness. Bilateral Babinski's sign was present.

The patient was treated with intravenous nitroprusside and admitted with a diagnosis of severe hypertension and brain stem infarction in progression. Heparin was administered. The patient deteriorated and became comatose and required intubation. Computed brain scan found a pontine infarct, bilat-



eral cerebellar infarctions and bilateral occipital lobe infarctions, all suggestive of basilar artery thrombosis.

The patient was a widow and her son requested that no resuscitation attempts should be made if her heart failed. The patient required ventilator assistance, but she was soon extubated. After one month of observation and treatment of recurring infectious and metabolic disturbances, the patient began to move her left side but not the right. The attending physicians and family had many discussions about her prognosis and by mutual agreement a gastrostomy tube was inserted and nutritional support initiated. She was treated with antibiotics for recurring infections and required nasal oxygen. After one month, the patient was transferred to a skilled nursing unit. There she received the benefits of physical, occupational, and speech therapy for coma stimulation. She had recurring episodes of bronchitis and urinary tract infections, treated with antibiotics. After a month of treatment in the skilled nursing facility, there was no sign of improvement and the patient was transferred to a nursing home. At the time of discharge, she opened her eyes spontaneously and at times appeared to make purposeful movement with the left arm only. There was no evidence of speech or understanding and no movement of the right side.

Four months later, her son reported by telephone that his mother remains in a nursing home. She cannot swallow and is fed through gastrostomy. She requires a lot of suctioning because she has difficulty handling her secretions. She could understand and nodded yes and no appropriately, but had no speech and only limited movement of her right side. ¶

## Appendix

### Current Opinions:

#### The Council on Ethical and Judicial Affairs of the American Medical Association (1989)

2.20 WITHHOLDING OR WITHDRAWING LIFE-PROLONGING MEDICAL TREATMENT. The social commitment of the physician is to sustain life and relieve suffering. Where the performance of one

duty conflicts with the other, the preferences of the patient should prevail. If the patient is incompetent to act in his own behalf and did not previously indicate his preferences, the family or other surrogate decision maker, in concert with the physician, must act in the best interest of the patient.

For humane reasons, with informed consent, a physician may do what is medically necessary to alleviate severe pain, or cease or omit treatment to permit a terminally ill patient to die when death is imminent. However, the physician should not intentionally cause death. In deciding whether the administration of potentially life-prolonging medical treatment is in the interest of the patient who is incompetent to act in his own behalf, the surrogate decision maker and physician should consider several factors, including: The possibility for extending life under humane and comfortable conditions; the patient's values about life and the way it should be lived; and the patient's attitudes toward sickness, suffering, medical procedures, and death.

Even if death is not imminent but a patient is beyond doubt permanently unconscious, and there are adequate safeguards to confirm the accuracy of the diagnosis, it is not unethical to discontinue all means of life-prolonging medical treatment.

Life-prolonging medical treatment includes medication and artificially or technologically supplied respiration or hydration. In treating a terminally ill or permanently unconscious patient, the dignity of the patient should be maintained at all times. (I,III,IV,V)

2.21 WITHHOLDING OR WITHDRAWING LIFE-PROLONGING MEDICAL TREATMENT—PATIENTS' PREFERENCES. A competent, adult patient may, in advance, formulate and provide a valid consent to the withholding or withdrawal of life-support systems in the event that injury or illness renders that individual incompetent to make such a decision. The preference of the individual should prevail when determining whether extraordinary life-prolonging measures should be undertaken in the event of terminal illness. Unless it is clearly established that the patient is terminally ill or permanently unconscious, a physician should not be deterred from appropriately aggressive treatment of a patient. (I,III,IV,V)

## References

1. Position of the American Academy of Neurology on certain aspects of the care and management of the persistent vegetative state patient. *Neurology* 39:124, 1989.
2. Bernat JL. Preface. Ethical issues in neurological practice. *Neurological Clinics*. Vol 7. No 4. November 1989. W.B. Saunders Co. Philadelphia. p xi.
3. *Ibid.* p xi.
4. *Ibid.* p xi.
5. Cranford R. *AAANews* 4:7, 1991.
6. After this article was written, the proposed legislation "The Oklahoma Rights of the Terminally Ill or Persistently Unconscious Act" was signed into law on April 23, 1992, by Governor David Walters.
7. Academy urges action on legality of durable power of attorney for health care. *Neurology* 39:9A, 1989.

## The Author

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# Overview of the Patient Self-Determination Act

Elise Dunitz Brennan, JD

**This article discusses federal Medicare and Medicaid legislation that requires certain facilities to advise patients of their rights under Oklahoma law regarding the termination of life support systems. The impact of this federal legislation on a physician's practice and relationship with his or her patient is discussed.**

On December 1, 1991, federal legislation known as the Patient Self-Determination Act (PSDA) went into effect. The PSDA is a result of amendments to the Medicare and Medicaid reimbursement programs through the adoption of the Omnibus Budget Reconciliation Act (OBRA) of 1990.<sup>1</sup> The PSDA's purpose is to enable patients whose health care is federally funded to be better informed participants in decisions about their health care, even after they lose the ability to voice their wishes.<sup>2</sup>

Congress passed the PSDA partly in response to the United States Supreme Court's decision in *Cruzan v Director, Missouri Department of Health*.<sup>3</sup> In *Cruzan*, the United States Supreme Court considered the issue of whether an incompetent patient has the constitutional right to discontinue life-prolonging treatment in the form of artificial hydration and nutrition, and, if so, under what circumstances.<sup>4</sup> The Missouri Supreme Court had held artificial hydration and nutrition were not medical treatments, and the state's interest in preserving life outweighed the patient's interest; thus, such care could not be with-

drawn on behalf of an incompetent patient.<sup>5</sup> Upon review in the United States Supreme Court, the issue posed was whether it was constitutionally permissible for Missouri to insist upon clear and convincing evidence of an incompetent patient's wishes regarding the withdrawal of artificial nutrition and hydration before honoring such wishes. The Supreme Court held each state may establish its own standards and criteria for these decisions, and that Missouri's evidentiary standard of clear and convincing evidence of the incompetent patient's wishes to have artificial hydration withdrawn was not a violation of the patient's constitutional rights.<sup>6</sup>

The Supreme Court ruling that an incompetent patient's wishes may be honored if proved by clear and convincing evidence is a catalyst for discerning a patient's desires before he or she is no longer capable of participating in the treatment process. Consequently, the PSDA was designed to encourage patients to consider treatment options and document their preferences. Pursuant to the PSDA, health care

## *Related articles, pp 381 and 394.*

institutions must inform patients about their common law and statutory legal rights to make health care decisions, including "advance directives" such as a living will.<sup>7</sup> Inherent in the passage of the PSDA is an assumption that educating patients about their rights will cause more patients to document and discuss their preferences on the use of life-prolonging treatment prior to the time when they are unable to do so.

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Beginning December 1, 1991, hospitals, long-term care facilities, home health care agencies, hospice programs, and health maintenance organizations that receive Medicare or Medicaid funding are required by the PSDA to provide patients or residents with certain written information about their common law and statutory legal rights under state law to make health care decisions. To assist these providers in distributing such written materials, individual states are required to provide a written description of the state's law on advance directives which the individual institutions may distribute.<sup>8</sup>

In addition to informing patients of their legal rights to make decisions on life-prolonging treatment, the institutions must distribute information to their patients describing the institutions' specific policy regarding these rights and how the rights are to be respected. Further, the institutions must document whether a patient has executed a form of advance directive in his or her medical records. Finally, the institution must provide education on advance directives to its staff and the community.<sup>9</sup> The PSDA materials and information must be distributed as follows:

- In hospitals, when an individual is admitted as an inpatient;
- In skilled nursing facilities, when an individual is admitted as a resident;
- By home health agencies, once the individual comes under the care of the agency;
- By hospice programs, when the individual begins to receive care from the program;
- By health maintenance organizations, when the individual is enrolled.<sup>10</sup>

The PSDA reiterates the principle that individuals have the right to make their own medical decisions, and to formulate advance directives to effect those decisions when the individual is incapacitated and thus unable to communicate his or her wishes. It requires a health care provider to ensure that a patient will not be discriminated against on the basis of the existence or absence of an advance directive.<sup>11</sup> It does not, however, override state laws that permit a health care provider to decline to comply with an advance directive as a matter of conscientious objection, as long as the patient has been informed about this aspect of the law.<sup>12</sup>

The PSDA has several limitations:

- Patients are not *required* to execute an advance directive, so it may fail to clarify a patient's wishes when he or she is unable to communicate;
- It does not address the rights of incompetent

patients who may execute an advance directive at a time they are legally unable to do so;

- It specifically applies to hospitals, skilled nursing facilities, home health agencies, hospice organizations, and health maintenance organizations that serve Medicare and Medicaid patients but is ambiguous as to whether it applies to other health care entities.

- Finally, the rights of incapacitated persons without an advance directive are unclear. Oklahoma is the only state in the country that forbids the termination of nutrition and hydration absent very limited circumstances or a desire to terminate such procedures documented in a validly executed living will.<sup>13</sup>

The health care provider's affirmative obligation to instruct persons about their legal rights under the PSDA will likely generate more discussions and questions on these issues from patients and their family members. This presents more challenges to Oklahoma physicians, as they must become conversant in state law regarding termination of life support systems. Some institutions in Oklahoma may require as part of the physician's participation in the institution that the physician inform the patient of the requirements set forth under the PSDA and document whether the patient has executed an advance directive. However, even in those institutions where the PSDA requirements are the responsibility of a nurse or social worker, in many instances patients who are advised of their Oklahoma legal rights on advance directives will turn to their physician for further explanation and clarity. All patients who enter an institution governed by the PSDA, whether or not Medicare or Medicaid recipients, will be advised of their legal rights. Thus, physicians can expect an ever increasing number of questions on these issues.

In addition, physicians and health care providers faced with decisions on the continuation of life support systems may confront several different interpretations of the incompetent patient's wishes from family and friends of the patient. It is conceivable that an Oklahoma physician may be presented with several contradicting living wills and a durable power of attorney on behalf of the same patient.

Fortunately, on April 23, 1992, Governor David Walters signed into law The Oklahoma Rights of the Terminally Ill or Persistently Unconscious Act (the "Act") which will take effect on September 1, 1992. This Act repeals the former Oklahoma Natural Death Act. This Act was passed as the result of the efforts of

a broad-based coalition made up of the Oklahoma State Medical Association, the Oklahoma Bar Association, and the Oklahoma Hospital Association, and a wide spectrum of special interest groups primarily for nursing homes and the elderly. The purpose of this Act is to restate and clarify Oklahoma law on advance directives. The passage of this new Act sets forth straightforward procedures for executing advance directives and health care proxies that will be more easily understood and followed by patients than those existing under prior law. In addition, the past confusion over the use of durable powers of attorney to designate a health care proxy has been clarified. Although the Act does not repeal the Hydration and Nutrition law, it make a properly executed living will an exception to the Hydration and Nutrition law. The Act does not revoke living wills which were made under the former Natural Death Act. In fact, it makes those living wills effective, even if they were executed by persons who were not terminally ill. This is a change from the former Natural Death Act.

The clarification of Oklahoma law, through the passage of this new Act, will help Oklahoma physicians advise patients of the methods to designate

their wishes regarding the use of life support systems prior to the time they are unable to verbally communicate their desires. Given the existence of the PSDA and the likelihood that this federal legislation will trigger more questions and discussions from patients and their families on the use of advance directives, the new understandable Oklahoma Act is a welcome change for physicians. J

#### References

1. Pub. L. No. 101-508, § 4206, 1990 Code Cong. & Admin. News (104 Stat.) 291, § 4751, 1990 Code Cong. & Admin. News (104 Stat.) 519.
2. Testimony of Representative Sander M. Levin Before the Subcommittee on Finance, 136 Cong. Rec. E2190-03 (daily ed. June 28, 1990).
3. 110 S. Ct. 2841 (1990).
4. *Cruzan*, 110 S. Ct. 2841.
5. *Cruzan v. Hannon*, 760 S.W. 2d 408 (Mo. 1988).
6. *Cruzan*, 110 S. Ct. 2841.
7. See Okla. Stat. tit. 63, § 3101 *et seq.*
8. PSDA § 4751(a)(1)(2); § 4206(a)(2).
9. PSDA § 4751(a)(2)(B), (E); § 4206(a)(2)(B), (E).
10. *Id.* § 4751(a)(2); § 4206(a)(2).
11. *Id.*
12. *Id.* § 4751(a)(2); § 4206(c).
13. Okla. Stat. tit. 63, § 3080.5c.

#### The Author

Elise Dunitz Brennan is a partner in the law firm of Doerner Stuart, Saunders, Daniel & Anderson in Tulsa and specializes in the representation of hospitals, health care organizations, and physicians. She currently serves as counsel for the Tulsa County Medical Society.

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## Dr Jay H. Stein is OUHSC's new senior vice-president and provost

Jay H. Stein, MD, a medical educator and a researcher in the structure, function, and diseases of the kidney, assumed the position of senior vice-president and provost of the University of Oklahoma Health Sciences Center (OUHSC) on August 1.

As senior vice president of OUHSC, Dr Stein will oversee the state's principal education and research center for physicians, dentists, nurses, biomedical scientists, pharmacists, public health administrators, and allied health professionals. With campuses in Oklahoma City and Tulsa, the OU Health Sciences Center has 3,000 graduate and undergraduate students, more than 900 full- and part-time faculty, and 1,600 staff employees.

"Dr Stein has earned an outstanding national record as an educator, researcher, clinician, and administrator," said OU President Richard L. Van Horn. "As chief executive officer, he will lead the OU Health Sciences Center to increased stature as a nationally recognized academic health center and as an economic resource for Oklahoma."

Dr Stein, formerly chairman of the Department of Medicine at the University of Texas Health Science Center at San Antonio, succeeds Dr Clayton Rich. Dr Rich, whose resignation as provost was effective July 1, has returned to the faculty and will focus on health policy issues.

A native of Chicago, Dr Stein earned his medical degree at the University of Tennessee Medical College (Memphis). He completed an internship and residency at State University of Iowa Hospital and served as a Renal Fellow at the Cardiovascular Research Laboratories at the University of Iowa Hospital and at the University of Texas Southwestern Medical School in Dallas.

Dr Stein served as a professor of medicine at Ohio



Dr Stein

State University College of Medicine before joining the University of Texas Health Science Center in San Antonio in 1975 as chief of the Division of Renal Diseases. He became chairman of the Department of Medicine at the Texas health facility in 1977 and was appointed to the Dan F. Parman Distinguished Chair in Medicine in 1986.

He has been the John P. Peters Lecturer at Yale University, the Harry Alexander Lecturer at Washington University, and the Bromberg Visiting Professor at the University of Texas Health Science Center at Dallas.

Dr Stein's medical interests and research efforts focus on renal physiology and diseases of the kidney. In addition to extensive activity in research, he is co-editor of the 22-volume textbook *Contemporary Issues in Nephrology*. Dr Stein also served as editor for the nephrology volume in the textbook *The Science and Practice of Clinical Medicine* and as editor-in-chief of the textbooks *Internal Medicine* and *Internal Medicine Diagnosis and Therapy*. He edits the internal medicine section of *Roundsmanship: A Year Book Guide to Clinical Medicine*.

Dr Stein has earned many honors, including being named Distinguished Medical Alumnus of the University of Iowa and receiving the Outstanding Physician Award of the Arthritis Foundation.

He is active in numerous medical organizations and national committees. Dr Stein served as president of the American Society of Nephrology in 1988-89. He also was president of the Southern Society for Clinical Investigation and of the Association of Professors of Medicine. From 1984 to 1991, he was a member of the board of governors of the American Board of Internal Medicine. He is a member of the editorial boards of four professional journals: *American Journal of Kidney Diseases*, *Mineral and Electrolyte Metabolism*, *Renal Physiology*, and *Kidney International*. □

## OSMA-HMSS chairman reports AMA action on national data bank

In December 1991 the AMA House of Delegates adopted Resolution 828 to read:

Resolved, that the American Medical Association seek to abolish the National Practitioner Data Bank.

At the Annual Meeting in June 1992, the AMA House of Delegates adopted an amended Board of Trustees Report QQ which contained certain policy and commitments as follows:

1. The AMA will continue to pursue remedial action to correct all operational problems with the National Practitioner Data Bank (NPDB);

2. Request that the Health Service and Resource Administration (HSRA) prepare and disseminate a white paper addressing its plans to enhance the confidentiality/security provisions of the reporting and querying process *no later than December 1992*;

3. Conduct a statistically valid sample of health care entities, other than hospitals, on the entity file to determine if entities that are not eligible to query under the statute and regulation have gained access to the NPDB information. Disseminate the results to the NPDB Executive Committee *no later than December 1992*;

4. Implement appropriate steps to insure and maintain the confidentiality of the practitioner's self-query reports *no later than December 1992*;

5. Recommend to Congress that small claims

payments, less than \$30,000, no longer be reported to the NPDB or provide the Executive Committee members the opportunity to attach their comments on the report that goes to Congress;

6. Allow, by January 1, 1993, the practitioner to append an explanatory statement to the disputed report;

7. Release the evaluation report, prepared by Mohammad Akhter, on the NPDB's first year of operation to the AMA by July 1992;

8. Re-evaluate at the Interim 1992 Meeting of the House of Delegates the progress on these issues; and

9. If the preceding requests are not met by the established due date, and the House of Delegates is not satisfied with progress on these issues, the American Medical Association should again re-evaluate the implementation of Policy 355.991 (AMA Policy Compendium 1992 Edition) which calls for the AMA to seek to abolish the National Practitioner Data Bank.

The Health Service and Resource Administration, Fitzhugh Mullan, MD, Director, had published a report of the first year's operation of the National Practitioner Data Bank. *JAMA*, July 1, 1992, Vol. 268, No. 1.

—William O. Coleman, MD  
Chairman, OSMA-HMSS



OSMA President James D. Funnell, MD (l), sits on stage with other state presidents and dignitaries at the June AMA meeting in Chicago.



Drs Sara R. DePersio, OKC, and John R. Alexander, Tulsa, members of the Oklahoma Delegation, study their notes at the AMA meeting.



## OSMA House of Delegates considers variety of issues at May meeting

For readers who may have missed the June issue of *OSMA News* and its breakdown of actions of the OSMA House of Delegates in May, the following is reprinted:

The OSMA House of Delegates considered 25 resolutions and numerous reports at its Annual Meeting last month.

In major actions, the OSMA House of Delegates:

- Opposed mandatory testing of HIV for physicians and other health care personnel and recommended that the Oklahoma Board of Medical Licensure and Supervision replace its newly enacted rule on contagious diseases with the following language:

"All physicians licensed to practice in Oklahoma have a continuing, affirmative obligation to maintain freedom from communicable diseases or conditions that would place patients at risk for transmission of serious disease. In the event that a physician is diagnosed with such communicable disease or condition, that physician shall seek consultation from the multidisciplinary advisory committee of the Oklahoma State Department of Health to specifically inquire as to what restrictions or precautions, if any, should be implemented in the clinical practice.";

- Recommended that HIV and HIV patients be treated the same as any other contagious disease or patient with a contagious disease;

- Urged reform in Oklahoma Workers Compensation Court;

- Approved a \$25 dues increase, effective January 1, 1993;

- Recommended that PLICO provide malpractice coverage on at least a weekly basis to retired physicians who wish to work in indigent care clinics;

- Urged PLICO to consider aggressive litigation against attorneys who bring lawsuits against PLICO-insured physicians that are without cause;

- Recommended an intensive campaign to encourage Oklahoma physicians to take an alcohol history from their teenaged and adult patients and warn of the serious consequences of alcohol consumption;

- Recommended OSMA seek legislation to require that signs describing the dangers of alcohol consumption by pregnant women be prominently posted in establishments which sell alcoholic beverages;

- Endorsed the accreditation program for office

laboratories of the Commission on Office Laboratory Accreditation (COLA) and encouraged OSMA members to use COLA laboratory verification in lieu of direct state and/or federal certification;

- Asked Oklahoma State Department of Health to add a line to the death certificate to list tobacco use as contributory to cause of death;

- Affirmed that the use of lasers for surgery should be regarded the same as any other surgery and should only be performed by a licensed and fully trained physician and surgeon;

- Created an OSMA Council on Rural Health;

- Urged OSMA members to continue to care for Medicaid patients regardless of their ability to pay or the uncertainty of reimbursement rates, and asked the OSMA to work with the legislature to develop a more appropriate and reliable source of funding for Medicaid;

- Recommended the writing of guidelines for the proper use of asthma medications in schools so that the medicine is available to students when they need it;

- Urged OSMA to seek legislation that would prohibit insurance companies from discriminating against women diagnosed with "fibrocystic changes" and recommended use of the term *cystic nodularity* as an alternative for *fibrocystic changes*;

- Asked AMA to seek change in RBRVS rules which limit physician charges provided on hospital discharge days;

- Recommended OSMA form a Commission on International Graduates;

- Recommended OSMA seek legislation to ban smoking in all areas of day care centers and additional legislation to allow local communities to pass anti-tobacco laws stronger than current state statutes; and

- Urged OSMA to support all efforts to increase vaccinations of Oklahoma children.

In the past, the entire proceedings of the OSMA House of Delegates were published in the July issue of the *JOURNAL* of the OSMA. In order to reduce *JOURNAL* expenses, the proceedings will no longer appear in the *JOURNAL*. Member physicians who wish to receive the minutes of the 1992 House of Delegates may request them by calling the OSMA. □

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Oklahoma State Department of Health

## Tobacco and alcohol usage patterns among teens and adults alarming



Many of the risk factors for chronic diseases which occur later in life take root during adolescence. In particular, attitudes and patterns related to alcohol and tobacco use may persist from adolescence to adulthood. To assess these patterns in Oklahoma, the Oklahoma State Department of Health (OSHD) has used two survey tools, the Behavioral Risk Factor Survey (BRFS), and Teen Wellness Check. The BRFS is a standardized questionnaire developed by the Centers for Disease Control (CDC) to collect information on self-reported health habits and risk

***Oklahoma ranks first among the 50 states and the District of Columbia in the percentage of women ages 35 to 63 who smoke.***

factors that contribute to the development of chronic diseases. Although not a standardized survey, the Teen Wellness Check, as a health assessment tool, has collected valuable information on the health behaviors of more than 5,000 teens.

According to the Teen Wellness Check, 32% of those high school students assessed since 1985 reported at least some alcohol consumption. The percentage of alcohol usage increased with each grade level and was higher among males than females, with 45.3% of males in the 12th grade reporting alcohol use. Twelve percent of high school students reported occasions of heavy (acute) drinking, having five or more alcoholic drinks in one day. This percentage increased with grade level and was highest among older males, with more than 20% of 12th grade males reporting alcohol consumption in excess of five drinks in one day. An alarming 33% of those surveyed reported driving, or riding with someone, under the influence of alcohol.

To assess adult drinking behaviors, the Behavioral Risk Factor Survey includes several open-ended questions about what kind of alcohol is consumed, how much, and how often. According to the survey, acute drinking is defined as having five or more drinks on an occasion, one or more times during the

last month. Chronic drinking refers to an average of 60 or more alcoholic drinks per month. Of adults surveyed in 1990, 10.7% were at risk for acute drinking, while only 1.4% were at risk for chronic drinking.

There were significant differences among male and female alcohol consumption patterns. The survey determined that 16.4% of male respondents were at risk for acute drinking, compared to only 5.5% of female respondents. For chronic drinking, 2.7% of males, compared to only 0.3% of females, were at risk.

As with alcohol use, cigarette smoking often begins during the teen years, and based on Teen Wellness Check data, cigarette smoking among teens is a significant problem in Oklahoma. Sixteen percent of teenage boys and girls in grades 7-12 report that they smoke. As the grade level increased, the percentage of boys and girls who smoked increased. In grade 12, 22.5% of boys and 19.7% of girls report smoking cigarettes.

Teens who begin smoking during their adolescent years find it especially difficult to stop. Oklahoma ranks sixth in the percentage of women of childbearing age, ages 18 to 44, who smoke. Oklahoma ranks first among the 50 states and the District of Columbia in the percentage of women ages 35 to 63 who smoke.

Perhaps with sustained programs targeted toward Oklahoma's youth, rates of alcohol abuse and tobacco use will decrease among Oklahoma teens—and adults—as those youth grow out of their teen years. J

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## AMA releases 1992 code of ethics in new *Current Opinions* edition

The American Medical Association's Council on Ethical and Judicial Affairs recently released the 1992 edition of *Current Opinions*, which is generally regarded as the medical profession's code of ethics. The AMA was founded in 1847, in part to set uniform standards of medical education and ethics.

"During the last two years, the council has dealt with many difficult ethical issues faced by the profession. The entire AMA is working with the council in a new initiative to ensure enforcement of our ethical

*(continued)*





Dr John R. Alexander (c), Tulsa, a member of the Oklahoma delegation, serves on a reference committee at the June meeting of the American Medical Association in Chicago.

## Code of ethics *(continued)*

standards," said Oscar Clarke, MD, council chairman.

Newly published opinions include:

- Rules generally prohibiting referrals to health care facilities in which referring physicians have financial interests;

- A provision that it is unethical for physician to deny treatment to HIV-infected patients or to those who refuse HIV testing, unless knowledge of HIV status is necessary for proper care;

- Guidelines for gifts from industry prohibiting physicians from accepting anything of substantial value, including travel and lodging expenses for educational and promotional events;

- Identification of gender and racial disparities in medical care and research as significant health care problems;

- Rules strictly forbidding sexual harassment and misconduct, including prohibition of sexual relations with patients;

- Recognition of a physician's right to associate professionally with a chiropractor if believed by the physician to be in the patient's best interest; and

- Rules for reporting impaired, incompetent, or unethical colleagues.

"Physicians must subscribe to the highest professional and ethical standards—above those of civil law or the marketplace," said James S. Todd, MD, AMA executive vice president.

The council has seven practicing physicians, one medical student, and one resident physician. They are selected for their medical accomplishments, diverse backgrounds, compassion, and personal integrity. The council consults with leading US ethicists in developing and issuing opinions, which cannot be changed by the AMA's House of Delegates or Board of Trustees. The council was started by the AMA's Office of the General Counsel. □

## IN MEMORIAM

### 1991

Ronald I. Cramer, MD	June 16
Edward Tiffin Cook, Jr., MD	June 18
Arvin Craig Roberson, MD	July 15
John Berry Gilbert, MD	August 6
Frank Leo Bradley, MD	August 31
Rugie Reginald Coates, MD	September 15
James Byron Snow, MD	September 28
Howard Angus, MD	October 9
Jack Owen Alexander, MD	October 21
Roy Oliver Kelly, Jr., MD	October 22
Lowell Francis Thornton, MD	October 22
Lillian Marie Hoke, MD	October 25
Irwin Hubert Brown, MD	October 27
Harold Houston Jones, Jr., MD	October 27
Francis Ray First, Jr., MD	October 28
Robert W. Kahn, MD	October 30
Charles Hugh Wilson, MD	October 30
George Kellogg Stephens, MD	November 4
Edward M. Farris, MD	November 22
Weldon Keiller Haynie, MD	November 25
Samuel Richard Fryer, MD	November 30
William Thomas Snoddy, MD	December 3
Philip George Joseph, MD	December 20
Charles Patrick Kirkland, MD	December 24

### 1992

John Moore Campbell III, MD	January 24
Bruce Ratliff Hinson, MD	January 24
Louis Carroll Taylor, MD	February 3
Earl Russell Muntz, MD	February 4
Claude Marion Bloss, Jr., MD	February 24
Oliver James Hagg, MD	March 31
Francis Patrick Cawley, MD	April 17
Don Horatio O'Donoghue, MD	April 20
Billie Gene Henley, MD	April 24
Arlo Kenneth Cox, MD	April 27
Charles Victor Williams II, MD	May 1
Benjamin Joe Myers, MD	May 13
Robert Victor Bolene, MD	May 18
William Anders Crockett, MD	May 30
Charles Jackson Young, MD	May 31
Robert R. Dugan, MD	June 18
Ransom Francis Ringrose, MD	June 18
John L. Plewes, MD	June 21
David Lloyd Edwards, Sr., MD	June 23
Harlan Thomas, MD	June 30



# New advance directive laws to take effect in Oklahoma September 1

By Laura L. Cross, JD, RN

After months of work by a historic coalition sponsored by the OSMA and the Oklahoma Bar Association, House Bill 1893<sup>1</sup> became law on April 23, 1992. Effective September 1, 1992, House Bill 1893 repeals the *Oklahoma Natural Death Act*, the current law which defines an Oklahoman's rights to make advance treatment decisions, and replaces it with the *Oklahoma Rights of the Terminally Ill or Persistently Unconscious Act (Rights Act)*. House Bill 1893 also amends the *Hydration and Nutrition for Incompetent Patient Act (Nutrition Act)* and the *Oklahoma Guardianship Act*. House Bill 1893, in conjunction with amendments to the *Uniform Durable Power of Attorney Act*, passed as part of House Bill 2402, greatly improves Oklahoma's laws on advance directives.

**Options of Rights Act.** The *Rights Act* authorizes competent adults who are 18 years or older to sign a statutory form entitled the Oklahoma Advance Directive for Health Care (Advance Directive). The statutory Advance Directive<sup>2</sup> includes four major options for the declarant (ie, person who executes it). First, similar to the Directive to Physicians of the old law, the Advance Directive provides for a Living Will which becomes operational when the declarant is no longer able to make decisions and is certified by two

decisions in consultation with the attending physician regarding medical treatment. If designated, the proxy would be able to make health care decisions when the declarant is no longer able to do so and is determined to be in a terminal condition. Such decisions may include withholding or withdrawal of life-sustaining treatment.

Finally, if authorized, the proxy can make health care decisions when the declarant has been determined to be persistently unconscious. If the declarant has both signed the Living Will and designated a health care proxy, the Living Will takes precedence if a conflict arises unless the declarant specifically indicates otherwise on the form.

The strength of the new law's Advance Directive Form is that it offers Oklahomans several different options. The weakness of the form is that a declarant is required to sign the document in as many as 14 places to exercise all of these options. Execution of the Advance Directive need not be notarized, but must be witnessed by two individuals 18 or older, who are not relatives, nor other persons who will inherit anything from the declarant nor a trustee of the declarant's trust. Under the *Rights Act*, unless otherwise disqualified, the declarant's physician, the physician's employees, and the health care facility's employees may witness the signing of an Advance Directive.

**Durable Power of Attorney.** Oklahoma law did not previously address whether one could authorize medical or life-sustaining treatment decisions through a Durable Power of Attorney. House Bill 2402, passed this session, clarifies that through a Durable Power of Attorney Oklahomans can authorize another to make health and medical care decisions for them when they are no longer able to make their own decisions. However, this power does not include authority to make Advance Directives or life-sustaining treatment decisions unless the health-care proxy is appointed under the *Rights Act*. In other words, effective September 1, 1992, Oklahomans can use a Durable Power of Attorney to authorize others to make non-life-sustaining medical treatment decisions for them but must use the Advance Directive, if they desire, to designate a proxy to make life-sustaining treatment decisions for them.

**Hydration and Nutrition.** House Bill 1893

## *Related articles, pp 381 and 385.*

physicians to be in a terminal condition. This right differs from the old law primarily by the expanded definition of *terminal condition*. Under the *Rights Act*, declarants become qualified to have their Advance Directive followed when in the opinion of their attending and another physician, they suffer from an "incurable and irreversible condition that even with the administration of life-sustaining treatment, will... result in death within six (6) months."<sup>3</sup>

Second, if the declarant chooses, the Living Will may also become operational when two physicians find the declarant to be persistently unconscious. Persistently unconscious (commonly referred to as a persistent vegetative state) is defined as "an irreversible condition... in which thought and awareness of self and environment are absent."<sup>4</sup>

Third, the declarant has the option of designating a health care proxy (and an alternate) to make

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originally included a provision repealing the controversial *Nutrition Act*. The repeal of the *Nutrition Act* was removed by the House of Representatives in its deliberations. Therefore, Oklahoma law continues to presume that every incompetent person has directed tube feedings be given to maintain life if the person is unable to normally partake of food and water in sufficient amounts to maintain life. As amended, this presumption can be overcome when:

the attending physician of the incompetent patient knows, or a court finds, by clear and convincing evidence that the patient, when competent, decided on the basis of information sufficient to constitute informed consent that artificially administered hydration or artificially administered nutrition should be withheld or withdrawn from him.<sup>5</sup>

A Directive to Physicians (the old law form) executed prior to September 1, 1992, or an Advance Directive executed under the *Rights Act* specifically authorizing withholding or withdrawal of artificially administered hydration and nutrition are deemed by the new law to overcome the presumption in favor of tube feedings. The amended law recognizes the right of a health care proxy designated in accordance with the *Rights Act* to order tube feedings be withheld or withdrawn. The other exceptions in the *Nutrition Act* remain unchanged. In short, nourishment and hydration must continue to be artificially administered to incompetents (eg, minors, incapacitated adults, and those adjudged incompetent) unless they have an Advance Directive specifically designating they do not want artificially administered feedings, or the physician is presented clear evidence that the patient did not want tube feedings (and no one disagrees that this is what the patient wanted).

#### **Health Care Providers' Responsibilities.**

When an Advance Directive is presented to a physician or other health care provider, the *Rights Act* requires the health care provider to make it a part of the declarant's medical record. If a physician or health care provider is unwilling to comply with an Advance Directive, they are to promptly advise the declarant.

The physicians' determinations that a patient's condition qualifies for the directive to apply must also be made a part of the patient's medical record. A physician's failure to record a qualified patient's condition is unprofessional conduct subject to disciplinary action.

The *Rights Act* does not affect the responsibilities

of health care providers to provide for a patient's comfort or alleviation of pain. Nor does it require any physician or other health care provider to take any action contrary to reasonable medical standards. However, it does provide immunity from criminal or civil liability or discipline for unprofessional conduct for actions taken under the Act which are in accord with reasonable medical standards.

No physician or other health care provider is personally required to follow a patient's Advance Directive. However, when an Advance Directive becomes operative, health care providers are required to act in accordance with the Advance Directive's provisions or, as promptly as practical, to take all reasonable steps to arrange for the declarant's care by another health care provider. Failure to do so will be considered unprofessional conduct.

The Advance Directive of a qualified patient is not operative during the course of a pregnancy. Even if it is not known that a qualified patient is pregnant, the *Rights Act* requires the physician, when appropriate, to determine that the patient is not pregnant prior to following the Advance Directive.<sup>6</sup>

**Validity and Operation.** The *Rights Act* allows an individual of sound mind who is 18 or older to execute, at any time, an Advance Directive. Unless physicians or other health care providers have knowledge to the contrary, they may presume that an Advance Directive presented to them complies with the *Rights Act*. If there is more than one valid Advance Directive, the most recently dated Advance Directive will be considered the last wishes of the declarant. An Advance Directive may be revoked in whole or part at any time and in any manner by the declarant without regard to the declarant's mental or physical condition. An attending physician or other health care provider is to make the revocation a part of the declarant's medical record. The revocation is effective upon communication to the attending physician or other health care provider by the declarant or a witness to the revocation.

In general, a patient's Advance Directive becomes operative when:

- (1) it is communicated to the attending physician;
- (2) the declarant is no longer able to make decisions regarding administration of life-sustaining treatment; and
- (3) the declarant's condition meets the qualifications chosen in the directive.

**Other Protections.** The *Rights Act* does not condone, authorize, or approve mercy killing, assisted suicide, or euthanasia. Coercing or fraudu-



lently inducing another to sign an Advance Directive or a revocation is a felony. It is also a felony to conceal, cancel, deface, or obliterate an Advance Directive without the declarant's consent, or to falsify, forge, or hide one.

A health care proxy is protected from criminal or civil liability or discipline for unprofessional conduct with respect to decisions regarding the declarant if the decisions are made in good faith. However, the health care proxy must "make such decisions based on the known intentions, personal views, and best interest of the declarant."<sup>7</sup> If there is no evidence of the wishes of the declarant, the health care proxy's decision must be based on the proxy's reasonable judgment about the values of the declarant and what the wishes of the declarant would be based upon those values.

Finally, a patient cannot be required to make nor be prohibited from making, an Advance Directive as a condition for receiving health care services. A person who requires or prohibits the execution of an Advance Directive as a condition of being insured will be guilty of a felony.

**Other Advance Directives.** The *Rights Act* recognizes formal documents executed in other states if made: (1) in compliance with the laws of that state, and (2) for purposes of withholding or withdrawing life-sustaining treatment which are consistent with Oklahoma law. The *Rights Act* also recognizes a Directive to Physicians executed under *Oklahoma's Natural Death Act* if signed prior to September 1, 1992. Under the old law the Directive to Physicians was only binding on physicians if executed or re-executed after the declarant was determined to be in a terminal condition. Recognizing that many people signed Directives to Physicians believing they would be binding, the *Rights Act* provides that such directives will be binding unless there is evidence that the declarant intended the directive not to be binding.

**Conclusion.** Although the *Rights Act* does not do everything the coalition hoped for,<sup>8</sup> it is a significant improvement over the old law. It offers a number of new options regarding end-of-life treatment decisions, including designation of a health care proxy and application when the declarant is persistently unconscious. It expands the definition of *terminal condition*. It assures Oklahomans who have made the effort to execute an Advance Directive in accordance with the law that their directions will be followed and protects physicians and other health care providers when they follow Advance Directives.



## Notes

1. Enrolled House Bill 1893, 43rd Leg., (hereinafter HB 1893) was introduced by Representative Jeff Hamilton. Its principal Senate sponsor was Cal Hobson. Additional sponsors in the House were Representatives Hudson, Niemi, Monson, Roach, McCorkell, Paulk, Peltier, Thompson, Maxey, Widener, Stottlemeyer, Hutchcroft, Vaughn (Ray), Henshaw, Campbell, Holt, Hilliard, Stanley, and Tyler. Additional Senate sponsors were Senators Shedrick, Rubottom, and Chandler.
2. Copies of the Advance Directive form and a Questions and Answer pamphlet are available from Roy Keen, Oklahoma Department of Human Services, Aging Services Division, PO Box 25352, Oklahoma City, OK 73125, (405) 521-2327. Copies of Guidelines for Signers are available from the author at Miller, Dollarhide, Dawson & Shaw, Second Floor, 100 Park Avenue, Oklahoma City, OK 73102-8099, (405) 236-8541.
3. HB 1893, Section 3(12). Under the *Natural Death Act*, terminal condition was defined more narrowly to apply only if the patient was expected to die within days or hours.
4. HB 1893, Section 3(7). A persistently unconscious person, such as Nancy Cruzan, could not, even with a Directive to Physicians, qualify for removal of life-sustaining treatment under Oklahoma's former law.
5. HB 1893, Section 17.
6. HB 1893, Section 8(C). Based on this provision it may be advisable to run a pregnancy test on a woman of child-bearing age who has not been sterilized to document appropriate assessment.
7. HB 1893, Section 16.
8. In addition to repeal of the *Nutrition Act*, the coalition lobbied for enactment of House Bill 2037, which was not reported out of committee. HB 2037 provides for a prioritized list of significant others who are authorized by law to make life-sustaining treatment decisions for incapacitated terminally ill patients who have not executed an Advance Directive.

## The Author

Laura L. Cross is a director of the Oklahoma City law firm of Miller, Dollarhide, Dawson and Shaw, co-chair of the Oklahoma Governor's Task Force on Bioethics, secretary of the Oklahoma Bar Association Health Law Section, and president-elect of the Oklahoma Health Lawyers Association. Ms Cross practiced as a registered nurse for 20 years before she attended law school and now specializes in the areas of health law and civil litigation.

## For physicians and for patients

# AMA publishes two booklets on advance medical directives

Guides on living wills and powers of attorney for health care have been developed and published for patients and physicians by the American Medical Association (AMA).

"It is the right of patients to make advance medical directives," said James S. Todd, MD, AMA executive vice president. "Health care wishes should be made in advance, so that family members, physicians, and attorneys know the type of care patients desire."

Called *Advance Medical Directives for Patients*, the booklet for patients outlines the two different types of advance directives, living wills, which describe the kinds of medical treatment patients wish to receive, and durable powers of attorney, which patients use to appoint others to make medical decisions when they are unable to do so for themselves.

The booklet also includes information about who should complete advance directives, when they would take effect, and in which situations each type of directive is appropriate.

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## Internists learning in detail the ABC's of new clinical laboratory rules

Physician questions and concerns about September's implementation of the Clinical Laboratory Improvement Amendments of 1988 (CLIA '88) are addressed in the June issue of *The Internist: Health Policy in Practice*, the magazine of the American Society of Internal Medicine (ASIA).

The "nuts and bolts" of complying with CLIA '88 are explained in an essay by ASIM policy analyst Tammy Zinsmeister. Zinsmeister, the principal author of an ASIM guide on compliance with CLIA '88, details the steps physicians should take to make sure their labs meet the proficiency testing, quality control, and personnel standards of the new rules.

The government has given the private sector a role in the implementation of CLIA '88. The Commission on Office Laboratory Accreditation, or COLA, is one group that in all likelihood will be given government approval to accredit physician office labs (gov-

ernment approval for private accreditation programs is pending). According to COLA's Chief Executive Officer J. Stephen Kroger, MD, of Longmont, Colo., physicians seeking accreditation through COLA will enjoy the advantage of dealing with their peers instead of regulators. When enforcement of the new lab rules begins, federal inspections will be unannounced, but Dr Kruger, who also serves as an ASIM trustee, writes that COLA hopes to notify physicians in advance when a surveyor is coming so as to minimize disruptions of patient care.

A cross-section of perspectives on the implications of CLIA '88 is found in a round table discussion featuring the views of practicing internists and a medical technologist. The participants agree that the rules are, at the very least, less burdensome than expected and are, at best, an important step toward improving quality assurance and accuracy in laboratories.

For a copy of the June issue of *The Internist: Health Policy in Practice*, send \$3 to ASIM, 2011 Pennsylvania Avenue, Suite 600, Washington, DC, 20006-1808. A one-year subscription costs \$24. ¶

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### Advance directives booklets (continued)

In addition, it contains information about where to obtain legal advance directive forms as well as a worksheet patients can use to spell out medical care goals for their designated agents. The worksheet can be attached to an advance medical directive to lend additional insight into the type of care the patient wishes to receive.

*Advance Medical Directives for Physicians* offers a list of suggested steps physicians should take to assist patients in the creation of their advance medical directives.

"The AMA strongly urges physicians to encourage patients to create advance medical directives," said Todd. "The AMA is making this information available to physicians so that they can assist patients in making educated decisions about their care."

Packets of 12 *Advance Medical Directives for Physicians* are available to members for \$12 and non-members for \$15. Orders can be placed by calling 800/621-8335 and requesting order number OP634392BN. Packets of 10 *Advance Medical Directives for Patients* are available to members for \$12 and non-members for \$15. Orders can be placed by calling the toll-free number and requesting order number OP634292BN. Individuals can order one free copy (orderers will be charged for postage and handling) by calling the toll-free number and requesting order number NC634492BN. ¶

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## DEATHS

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### Robert Victor Bolene, MD 1925 - 1992

Robert V. Bolene, MD, Ponca City obstetrician-gynecologist, died May 18, 1992. Dr Bolene, a native of Enid, was a 1948 graduate of the University of Oklahoma School of Medicine. After an internship in Detroit, he returned to University Hospital in Oklahoma City to complete his residency. Dr Bolene served in the US Air Force from 1950 to 1952.

### Arlo Kenneth Cox, MD 1906 - 1992

Arlo K. Cox, MD, died April 27, 1992, in Bushnell, Fla., where he had lived since his retirement in 1970. A native of Lenora and a 1932 graduate of the University of Oklahoma School of Medicine, Dr Cox had a general practice in Watonga for 40 years. During World War II he was stationed in Washington, DC, with the US Army Medical Corps; at the time of his discharge, he held the rank of captain.



**William Anders Crockett, MD**  
**1931 - 1992**

General practitioner William A. Crockett, MD, died May 30, 1992, in Oklahoma City. Born in Chouteau, Dr Crockett was a 1961 graduate of the University of Oklahoma College of Medicine and had been a member of the OSMA since 1963. He had a private practice in Woodward for six years before returning to the Oklahoma City area in 1969.

**Robert R. Dugan, MD**  
**1920 - 1992**

Robert R. Dugan, MD, an occupational medicine specialist in Oklahoma City, died June 18, 1992. Born in Philadelphia, Dr Dugan earned his medical degree from Hahnemann Medical College in 1945. He served in the US Army from 1946 to 1948. His practice then took him to Lancaster, Pa; Ponca City, Okla; and Houston. In 1967, he moved to Oklahoma City, where he retired in 1985.

**David Lloyd Edwards, Sr., MD**  
**1907 - 1992**

Tulsa ophthalmologist David L. Edwards, Sr., MD, died June 23, 1992. Dr Edwards was born in Ponca City and graduated from Northwestern University Medical School, Chicago, in 1931. He served his internship at St. John Medical Center in Tulsa in 1931-32 and became chief of staff there in 1954. He was secretary on the hospital's Board of Governors for 10 years and was the hospital's "Doctor of the Year" in 1982. He also served on the Board of Trustees of the Dean McGee Eye Institute in Oklahoma City. Dr Edwards was an OSMA Life Member.

**Billy Gene Henley, MD**  
**1924 - 1992**

Mountain View native Billy Gene Henley, MD, died April 24, 1992, in Lawton. He was graduated from the University of Oklahoma School of Medicine in 1948 and completed an internship in Chicago. His residency work was done at both Wesley Hospital in Oklahoma City and University Hospital in Little Rock. During World War II and the Korean conflict he served in the US Navy. An OSMA Life Member, Dr Henley's private ob/gyn practice included both Shawnee and Lawton.

*(continued)*



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DOWNTOWN

### **Benjamin Joe Myers, MD** 1961 - 1992

Resident physician Benjamin J. Myers, MD, died May 13, 1992, in Tulsa. Dr Myers, a native of Seminole, earned his medical degree from the University of Oklahoma College of Medicine in 1989. He was an associate member of the American College of Physicians and a member of the American Society of Internal Medicine.

### **John L. Plewes, MD** 1946 - 1992

John L. Plewes, MD, professor and chair, Department of Anesthesiology, University of Oklahoma College of Medicine, Oklahoma City, died June 21, 1992. Dr Plewes was a 1970 graduate of Queens University Faculty of Medicine, Kingston, Ontario, Canada.

### **Ransom Francis Ringrose, MD** 1900 - 1992

OSMA Life Member Ransom F. Ringrose, MD, a retired family physician, died June 18, 1992, in Guthrie. A Chicago native, Dr Ringrose, a Chicago native, received his medical degree in 1927 from the University of Iowa Medical School. He began his 62-year practice in Guthrie the following year, spending the last 20 years in partnership with his son Robert. Dr Ringrose was a founding member of the Oklahoma Medical Research Foundation.


### **Harlan Thomas, MD** 1916 - 1992

Harlan Thomas, MD, 1964-65 president of the OSMA, died June 30, 1992. A native of Parthenon, Ark, Dr Thomas earned his medical degree from the University of Arkansas School of Medicine in 1950. He served an internship at Tulsa's then Hillcrest Memorial Hospital prior to his service as a staff sergeant in the US Army from 1951 to 1955. Dr Thomas established a general practice upon his return to Tulsa and went on to become very active in organized medicine. He served as president of the Tulsa County Medical Society (TCMS), the Oklahoma Academy of Family Physicians, and the local and state chapters of the American Academy of General Practice. In 1987 the TCMS Auxiliary named him "Doctor of the Year." The same year he became a Life Member of the OSMA.

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**Charles Jackson Young, MD  
1923 - 1992**

C. Jack Young, MD, an Oklahoma City dermatologist, died May 31, 1992. Dr Young was born in Norman and attended the University of Oklahoma School of Medicine, where he was graduated in 1947. He subsequently earned an MS degree in dermatology from the University of Virginia in 1950. From 1951 to 1953 he was in the US Public Health Service, where he practiced at the US Marine Hospital in San Francisco. Dr Young established his practice in Oklahoma City in 1955 and opened the Skin & Skin Cancer Center in 1964. He also taught dermatology at his alma mater. 

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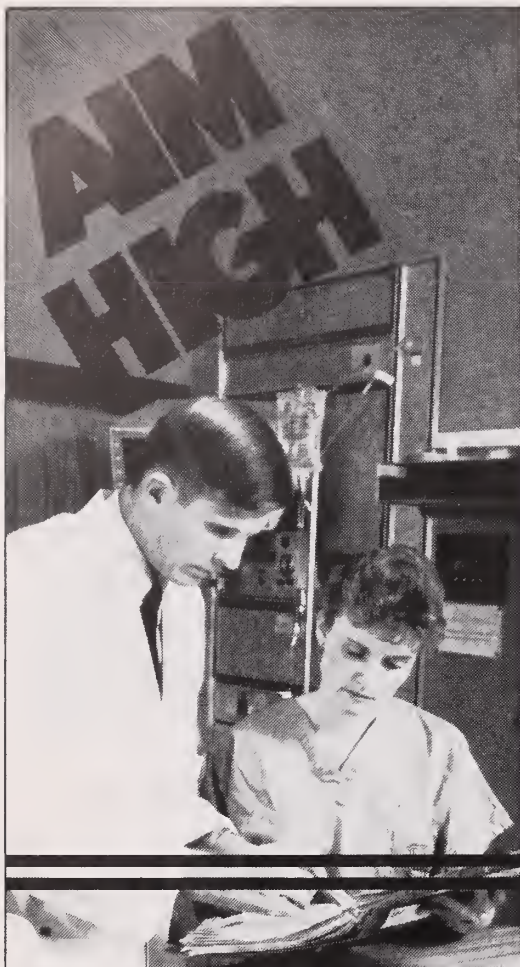
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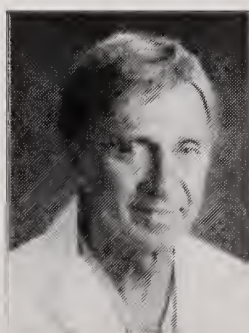
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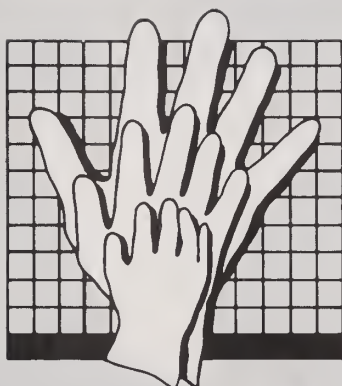
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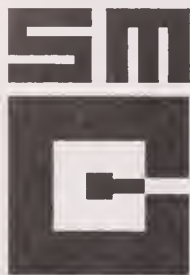
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■ **Harris D. Riley, Jr., MD, a former faculty** member at the University of Oklahoma Health Sciences Center (OUHSC) and book review editor of the *JOURNAL*, has been honored by the formation of a university society named for him. Through dues and contributions, the Harris D. Riley, Jr., Pediatric Society will establish an endowment which will, in turn, create the Riley Society Award. The annual award will be presented to a house officer in the department, in recognition of noteworthy accomplishments and/or performance. The endowment also will provide a means of supporting the existing Department of Pediatrics house staff program, and will establish the Riley Society Lectureship on pediatric infectious diseases. Dr Riley was a member of the OUHSC faculty for 33 years before accepting a position at Vanderbilt University last September.

■ **Gilbert G. Haas, Jr., MD, Edmond, chief of** the Section of Reproductive Endocrinology & Infertility at OUHSC in Oklahoma City, has been elected president of the American Society for the Immunology of Reproduction. He will serve a one-year term which began June 20. Dr Haas is a graduate of Baylor College of Medicine in Houston and is now a tenured professor of obstetrics and gynecology at OUHSC. He is board certified in both obstetrics and gynecology and reproductive endocrinology and infertility.

■ **Theodore J. Brickner, MD, Tulsa radiologist,** was recently appointed by Governor David Walters to the Oklahoma State Board of Medical Licensure and Supervision. His seven-year term began July 1.

■ **The John W. Records Chair of Obstetrics and Gynecology** has been established at the University of Oklahoma. The chair, honoring Dr Records and his contributions to Oklahoma's medical community, was made possible by a gift from his son George J. Records and his family and contributions from the faculty of the Department of Obstetrics and Gynecology, with matching funds from the State Board of Regents for Higher Education.

Recipient of the chair is William F. Rayburn, MD, also named director of the Section of Maternal-Fetal Medicine at OUHSC. Dr Rayburn obtained his medical degree and completed his residency in obstetrics and gynecology at the University of Kentucky Medical Center. He is board certified in both obstetrics and gynecology and maternal-fetal medicine. Dr Rayburn

has received numerous honors and awards for his research, medical publications, and teaching.

■ **A new 24-hour toll-free number now links** Oklahoma physicians and their patients to high risk pregnancy services sponsored jointly by the Oklahoma Medical Center, the University of Oklahoma Health Sciences Center, and Presbyterian Hospital. Through the number, 1-800-937-5543, referring physicians and other health care providers can receive consultation from a board-certified perinatologist. After phone consultation, fetal monitoring strips of patients being monitored at referring hospitals can be faxed to the maternity units of the selected hospital or to the on-call perinatologist's home or office. A consultation report will be faxed back with recommendations. There are no professional charges for the telephone or fax consultations.

The services were created to meet the needs of Oklahoma physicians and their patients for the highest level of clinical experience in maternal-fetal medicine (perinatology). Other services offered by the new program are 24-hour coverage for referral, intensive care maternity beds, Level III neonatal intensive care, prenatal assessment, outreach education programs, and preceptorships and mini-courses. Physicians in the program are William F. Rayburn, MD; John I. Fishburne, Jr, MD; Gary R. Thurnau, MD; Warren M. Crosby, MD; Gerald G. Payne Jr., MD; and Kurt A. Hales, MD (Senior Fellow).

■ **The "Current Concepts in Chest Diseases Course"** is scheduled for October 9 and 10, 1992, at the Hyatt Regency Dallas at Reunion, Dallas, Texas. Sponsored by the OUHSC Department of Medicine, Pulmonary Disease and Critical Care Section, it meets the criteria for 7 credit hours in Category 1 of the AMA Physician's Recognition Award. Tuition is \$40 per person. For information or to obtain a brochure, please contact Ms Dora Lee Smith, (405) 271-5904. D. Robert McCaffree, MD, is course director.

■ **The American Medical Association has prepared** a handbook to help the nation's 650 medical societies become involved in programs for detecting and preventing family violence in the community. The handbook, titled *What You Can Do About Family Violence*, will offer step-by-step advice for working with battered women's shelters, social service agencies, and hospitals. For more information, call Susan Raef, (312) 464-4446. □



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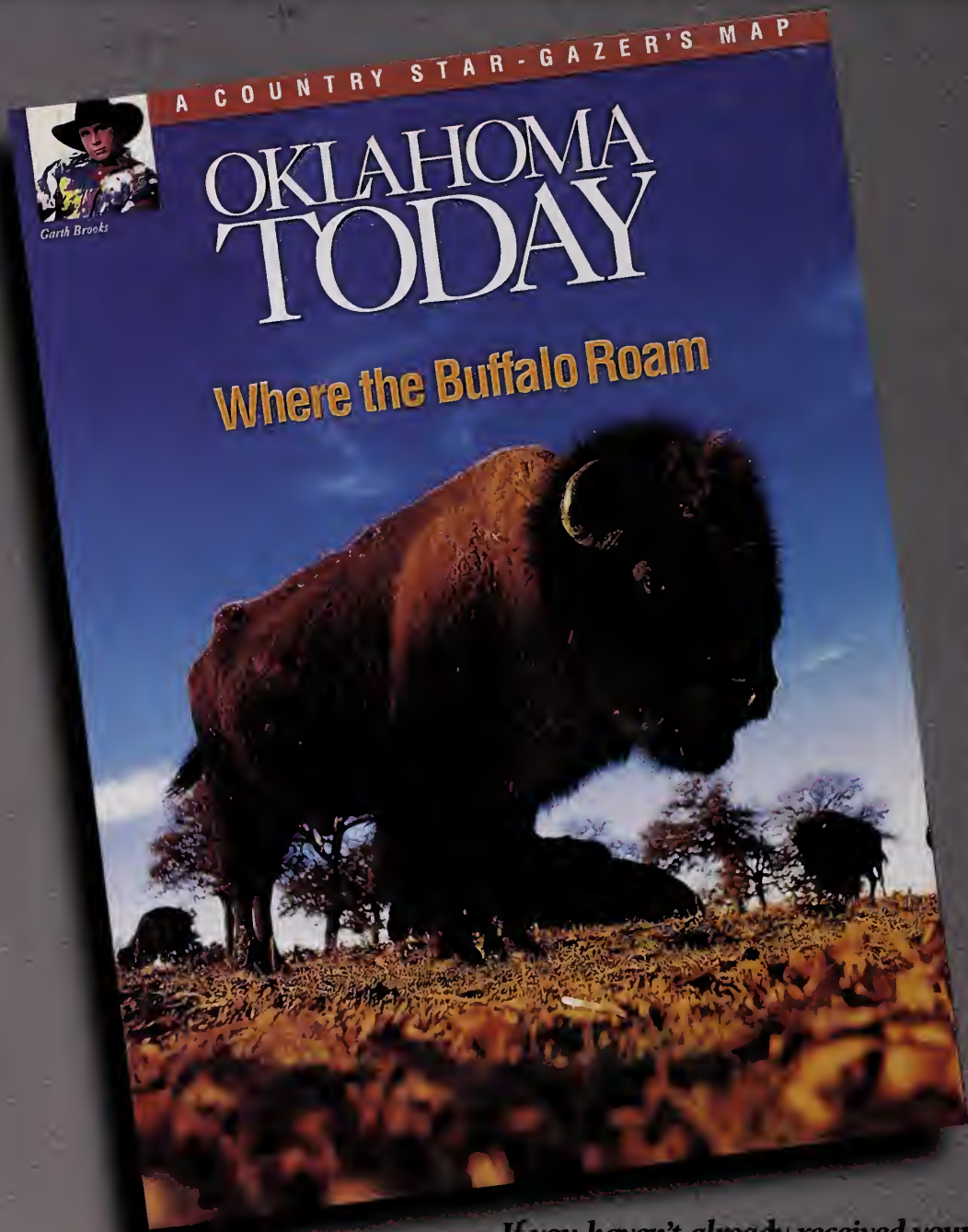
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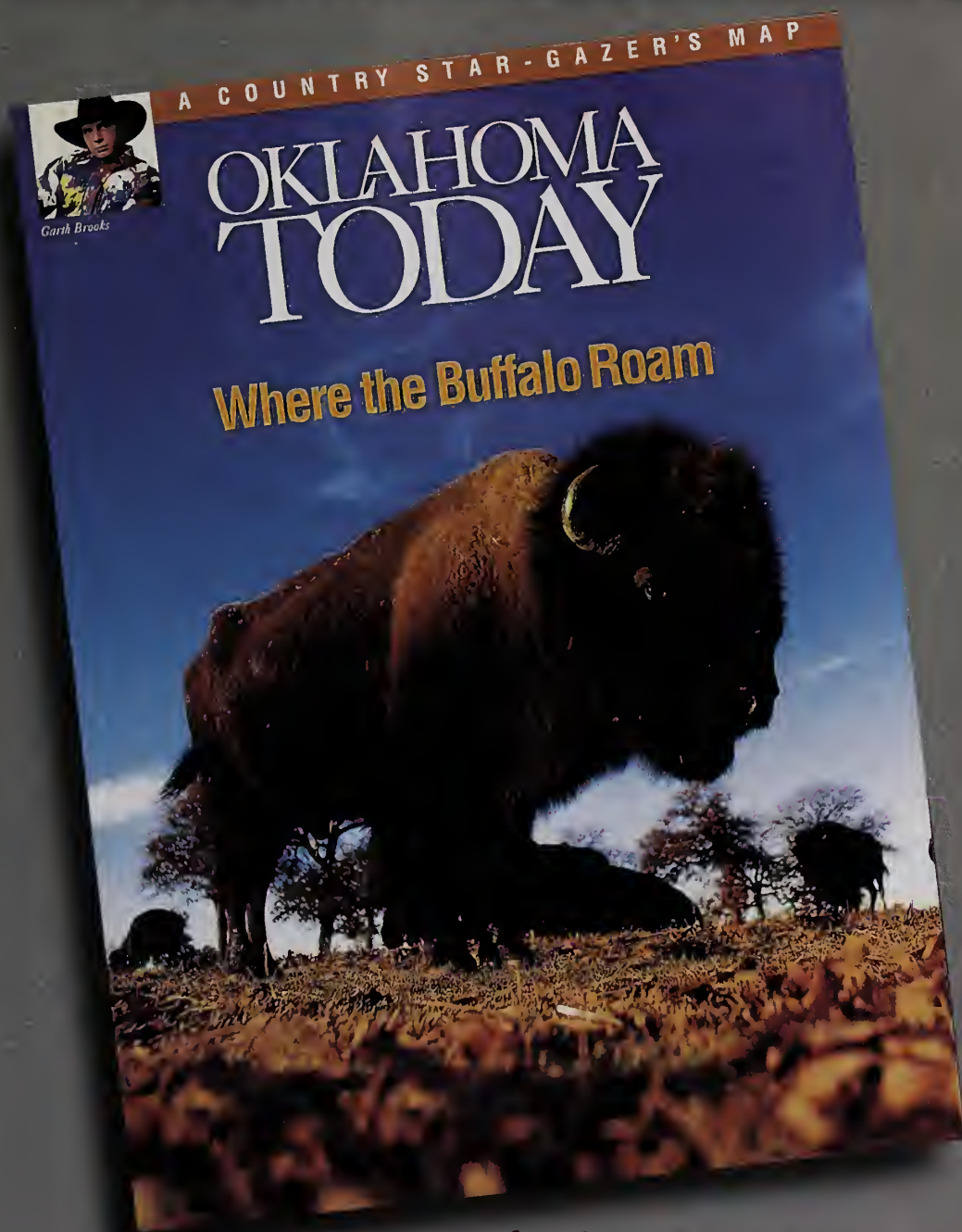
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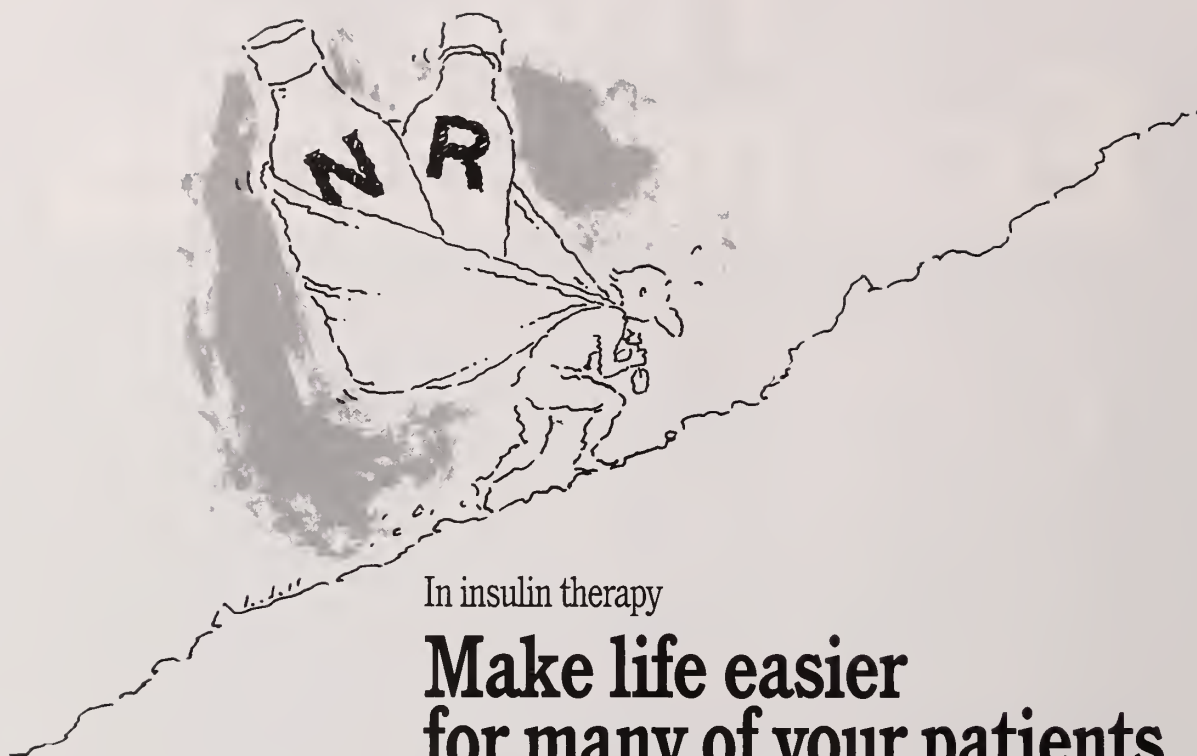
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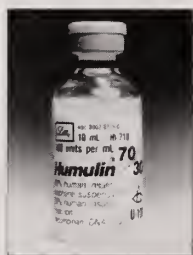
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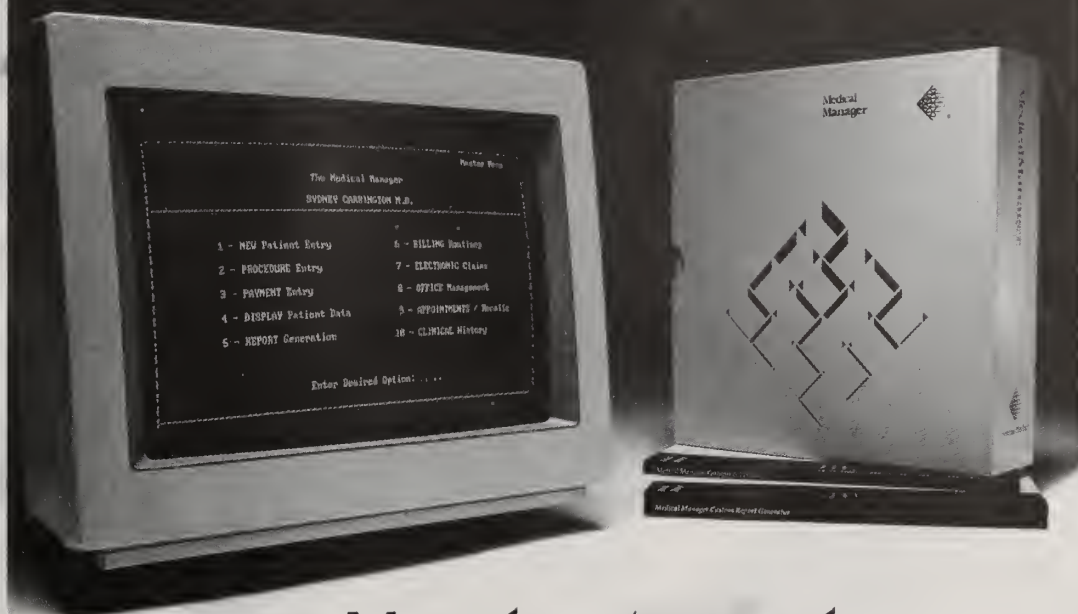
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## **A Giant First Step**

The Oklahoma law establishing the office of Chief Child Abuse Examiner is unique in the nation. This innovative law gives the medical profession a golden opportunity to exert a positive effect on the continuing catastrophe of child abuse that persists in our population.

Every year in Oklahoma, thirty to forty children are killed by their caretakers. Hundreds more are brain damaged, scarred, disabled, or emotionally ravaged. This cohort of abused children will generate most of the next generation of felons and dependent citizens. If Oklahoma had a resurgence of polio or whooping cough that caused half as much damage as child abuse, the citizens would rise up in arms to demand a cure, stat!

However, the Oklahoma Child Abuse Examiner system, initiated by the OSMA, appears poised to change this aboriginal epidemic. Now operating more than a year, a cadre of interested child abuse examiners has appeared. Dr Robert Block has been appointed Oklahoma's first Chief Child Abuse Examiner, and he has gathered a distinguished faculty of experienced forensic child abuse examiners to train the assembling corps of Oklahoma child abuse examiners.

This sterling faculty has held four training sessions during the past year, and about ninety MDs and DOs have completed the sessions that will lead to certification as Oklahoma child abuse examiners. Most of the participants have been pediatricians and family physicians, but an excellent sprinkling of other specialists has also studied. A broad geographic

representation has been achieved so that nearly every region of the state now has trained examiners nearby.

In addition, Dr Block has addressed four regional judicial conferences to promote the role of scientific forensic child abuse examination to Oklahoma judges and attorneys. Also, an improved liaison with DHS policymakers has been developed.

Dr Block's forensic expertise and his thoughtful leadership have laid a foundation for the construction of a sound edifice. The aegis of the OSMA has been invaluable in the development of the project. We take note that the initial phase of a long, important, perhaps tedious and contentious campaign is successfully launched.

The continued counsel, support, and participation of the entire medical profession is needed for mature function of the Oklahoma Child Abuse Examiner System. The aid and assistance of the judges, attorneys, and social workers of Oklahoma will be vital to success. Continuous reinforcement, maintenance, and moral support for Dr Block's work will be needed to achieve the important goal: The parents of the next generation of children need to grow up in homes that are free of child abuse and filled with nurturing and love.

*Ray V. McIntyre, M.D.*



## The Changing Faces in Medicine

September is the month when medicine officially honors its "Women in Medicine." The recognition is long overdue for female physicians whose perspective and sensitivity continue to change the face of medicine for the better.

In Oklahoma we always have been fortunate to benefit by the presence of women physicians. When I began my practice, physicians like Bertha M. Levy, MD; Hope Ross, MD; Elizabeth P. Fleming, MD; and several others served as role models to us all. But their numbers were far too few.

Things, I am pleased to report, are changing. Today, 30 to 40 percent of all medical students are women. When today's women medical graduates enter practice they will have hundreds of role models and mentors.

Physicians like Dr Joan K. Leavitt, who provides such effective leadership to the Oklahoma State Department of Health; Dr Myra A. Peters, who served as president of the Tulsa County Medical Society in 1968; Dr Carol Blackwell Imes, president of the Oklahoma County Medical Society; Dr Sara R.



DePersio, AMA alternate delegate and past chair of the OSMA Board of Trustees; Dr Joann Carpenter, immediate past president of the Oklahoma Chapter of the American Academy of Family Physicians; Dr Dala Jarolim, president of the Oklahoma Society of Internal Medicine; Dr Mary Anne McCaffree, newly elected AMA alternate delegate and vice-chair of the OSMA Board of Trustees; and Dr Elaine N. Davis, OSMA secretary-treasurer.

So blessed are we in Oklahoma that this list of outstanding physicians and medical leaders could go on indefinitely.

It also is appropriate during Women in Medicine Month to express our thanks to Rebecca Goen Tisdal, MD, who served as the first chair of the OSMA Women in Medicine Committee, and Donna J. Brown, MD, who will succeed her.

To Oklahoma's Women in Medicine, please accept a salute from your colleagues for enhancing the art and science of medicine in our state.

A large, stylized handwritten signature in dark ink, reading "James J. Dannel MD".



# Combined Intrauterine and Extrauterine Gestation: A Case Report

Joyce J. Mathews, MD; Philip L. Johnson, MD

The historical incidence of combined intrauterine and extrauterine gestation has been considered to be one in 30,000. However, recent reports have suggested that the actual incidence is much higher. We report a case of a combined intrauterine and extrauterine gestation, which emphasizes the importance of careful sonographic scrutiny of the entire pelvis and a high index of suspicion if the diagnosis of an ectopic pregnancy in association with an intrauterine gestation is to be made.

Combined intrauterine and extrauterine gestation has long been considered a rare entity with a historical incidence of one in 30,000. In fact, the identification of an intrauterine gestation has previously been considered to virtually exclude ectopic pregnancy. However, recent reports have suggested that the actual incidence of combined intrauterine and extrauterine gestation is probably much higher. This case report emphasizes the importance of careful scrutiny of the entire pelvis and a high index of suspicion if the diagnosis of an ectopic pregnancy in association with an intrauterine gestation is to be made.

## Case Report

A 35-year-old gravida 1 and para 0, who had a positive serum beta-subunit pregnancy test ten days earlier, presented to an outside institution with sudden onset of abdominal pain eight weeks after her last normal menstrual period. There was no history of

pelvic inflammatory disease, endometriosis, hormonal stimulation for infertility, or other significant gynecologic history. There was no vaginal bleeding. She was afebrile and vital signs were normal. Hemoglobin and hematocrit were 13.1 g/dl and 36.7%, respectively. A pelvic ultrasound performed at that time was reported to have demonstrated an intrauterine pregnancy of 7.5 to 8.5 weeks gestation and an 8 cm fibroid. She was given IV analgesia and sent home.

She did well for three days and then returned to the same institution with progressive, diffuse pelvic pain radiating to the right lower quadrant of the abdomen, right shoulder pain, and weakness. She reported no vaginal bleeding. The patient was stabilized and transferred to our institution at the request of her obstetrician. Pelvic exam was reported as difficult due to muscle guarding.

Hemoglobin and hematocrit at this time were 10.1 g/dl and 27.9%, respectively. Transabdominal ultrasound revealed a 8 cm % 8 cm % 13 cm fundal fibroid, an intrauterine gestation within the isthmic portion of the uterus (Fig 1) and an extrauterine gestation in the right adnexal region (Fig 2). Cardiac activity was demonstrated in both fetuses. Crown-rump lengths were 2.5 cm for both, consistent with a gestational age of 9.4 weeks. A considerable amount of fluid was demonstrated in the right subhepatic space, superior and lateral to the liver and within the rectouterine space.

The patient underwent emergency laparotomy with a preoperative hemoglobin and hematocrit of 7.5 g/dl and 22.2%, respectively. Findings at surgery

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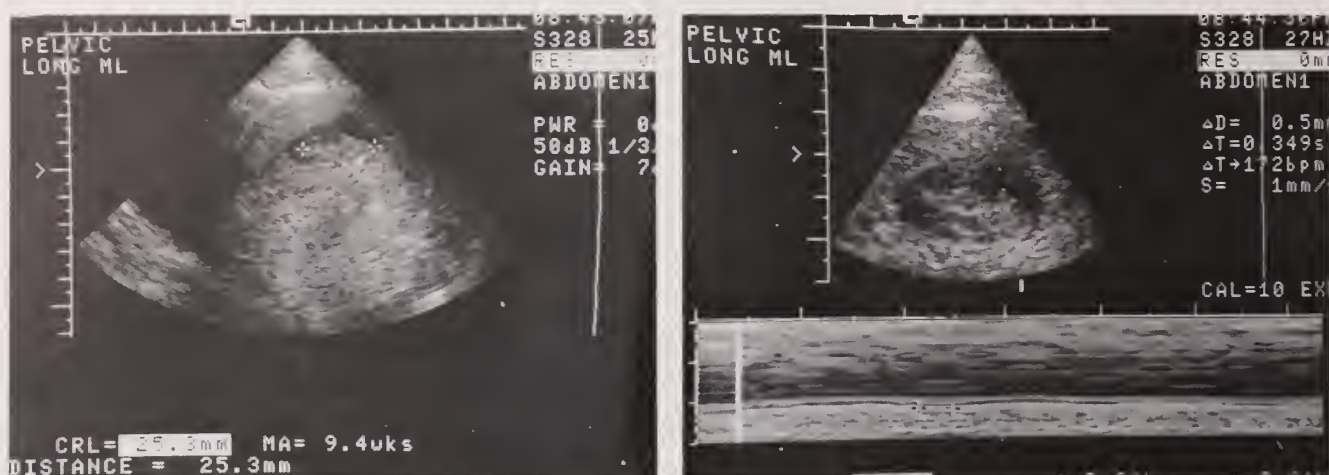


Figure 1. Ultrasound images of the intrauterine gestation demonstrating crown-rump length of 2.5 cm corresponding to a gestational age of 9.4 weeks (A) and cardiac activity on M-mode (B).

included hemoperitoneum, a large intramural fibroid occupying the majority of the uterus by palpation, and an ectopic gestation in the isthmic portion of the right fallopian tube (Fig 3). Fetal motion was detected within the ectopic gestation. A partial right salpingectomy was performed. Dilation and curettage were not performed due to the patient's desire to preserve the intrauterine gestation.

Pathologic evaluation of the ectopic specimen revealed a collapsed amniotic sac and an accompanying intact fetal structure with a crown-rump length of 2.5 cm. Recovery was uneventful and the patient subsequently delivered vaginally at term without any complications.

## Discussion

The first reported case of a combined intrauterine

and extrauterine gestation was in 1708 by Duverney, who made the discovery during an autopsy of a woman who died of a ruptured ectopic pregnancy.<sup>1</sup> As of 1987 there have been approximately 600 reported cases in the world literature.<sup>2</sup> Historically, the incidence of combined intrauterine and extrauterine gestation has been considered to be 1 in 30,000 pregnancies. This figure is based on calculations by DeVoe and Pratt in 1948.<sup>3</sup> They assumed that the incidence of ectopic pregnancy was 0.37% and the incidence of fraternal twins to be 0.8%. By multiplying these figures together, they surmised that the incidence of combined gestation would be 0.003% or 1:30,000. Obviously, this value is theoretical. Furthermore, their calculation does not include other forms of multiple gestations such as triplets, quadruplets, etc, which have since been reported in associa-

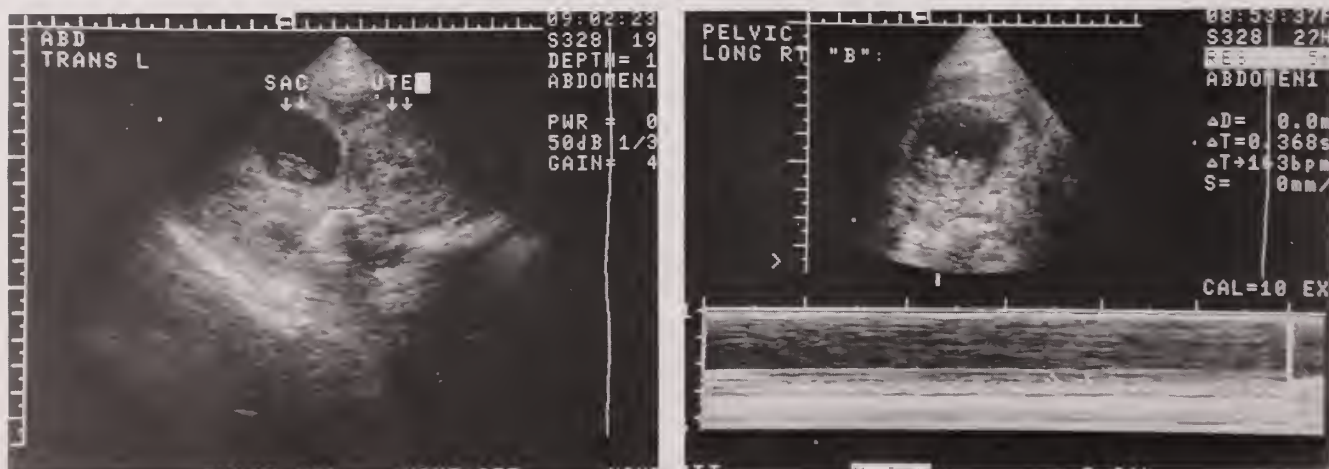


Figure 2. Extrauterine gestation located in the right adnexa (A). Cardiac activity is present on M-mode (B). Crown-rump length was also 2.5 cm (measurement not shown).





Figure 3. Photograph of ectopic gestation immediately after right salpingectomy. Scalpel handle is included for size comparison.

tion with ectopic gestation. Also superfecundation (the impregnation of two ova released during the same menstrual cycle, but different acts of coitus) has been proposed as an etiology although not substantiated.

Recently several authors have suggested that the actual incidence of combined intra- and extrauterine gestation is much higher than previously thought. In 1982 Richards et al estimated that the theoretical incidence was 0.0064% (1:15,600) and that the actual incidence based on their series might be as high as 0.038% (1:2600).<sup>4</sup> Reece et al reported an incidence of 1:7693 in their series.<sup>5</sup> In 1972 Berger and Taymor reported that the incidence of combined intrauterine and extrauterine gestations in patients receiving hormonal stimulation for infertility was 1:100.<sup>5</sup> Several factors, such as pelvic inflammatory disease, endometriosis, intrauterine devices, and hormonal stimulation for infertility, have been implicated for this apparent rise in the incidence of combined intrauterine and extrauterine gestations.

The preoperative diagnosis for combined intrauterine and extrauterine gestation has only been 10% according to previous reports.<sup>6</sup> The ultrasonographer must not be lulled into a false sense of security once an intrauterine gestation is identified. Careful evaluation of the entire pelvis, particularly the adnexae, and a high index of suspicion in the appropriate clinical setting are imperative if the diagnosis of a combined intra- and extrauterine gestation is to be correctly made. Our case report illustrates this point. In our case a fetal pole and cardiac

activity were identified in both an intrauterine (Fig 1) and an ectopic location (Fig 2) making the diagnosis unequivocal. However, often only a complex cyst and/or mass is identified in an extrauterine location, and a fetal pole can not be appreciated, particularly in earlier gestations. An intrauterine gestation can not be considered adequate evidence to exclude an ectopic gestation. In fact, some authors feel that ultrasound alone can never exclude ectopic pregnancy. Certainly, findings of fluid within the pelvis, abnormal appearance of either adnexae, or other suspicious sonographic findings make ectopic pregnancy difficult to exclude even in the presence of an intrauterine gestation.

Our patient went on to deliver at term without complication. The survival rate for the intrauterine gestation for simultaneous intra- and extrauterine gestation is reported to be between 30% and 50%.<sup>7</sup> One hopes that with a heightened awareness of this entity, the preoperative diagnosis can be increased and intrauterine gestation survival can improve. □

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# The Oklahoma Center for Molecular Medicine

Richard Green

In the early 1950s, a young but high-powered internist-cardiologist from the Mayo Clinic was visiting Tulsa, at the behest of a wealthy man who was trying to persuade the physician to practice in the "Oil Capital of the World."

The young man, Robert Tompkins, was impressed with the warmth of the people and the weather and with Tulsa's prosperity. "You ain't seen nuthin' yet" was the consensus of the boosters. But so much of the economy was built on oil that he wondered aloud what would happen if the boom played out. His question probably seemed argumentative if not bizarre to most Oklahomans who couldn't remember life without oil.

But in 1983, Tompkins observed the reality of his 30-year-old musings as the world's new oil barons in the Middle East forced oil prices to plunge. By Fiscal Year 1984, Oklahoma had a one hundred fifty million dollar budget shortfall.

At the same time, in states such as California, Massachusetts, and North Carolina, scientists using powerful new technologies were discovering the secrets of life within nature's most elemental unit, the cell. Venture capitalists appeared simultaneously, anxious to apply the new knowledge and technology to potentially useful and profitable purposes.

Meanwhile, in Oklahoma, many heretofore productive biomedical scientists were getting fed up with cutbacks in federal research dollars and the total lack of state support for research. How could they compete for federal funds without at least some local support to seed their efforts? Two of them, Drs

John Harley and David Kem, decided to approach their state legislator, Linda Larason, for help.

Others in Oklahoma were making overtures to Dr Patrick McKee to consider returning to his native state. After graduating from the University of Oklahoma College of Medicine in 1962, McKee eventually joined the Duke University School of Medicine faculty and excelled academically, clinically and, on the basis of impressive thrombosis and coagulation research, was named an investigator of the Howard Hughes Medical Institute. Some of his former OU classmates and colleagues thought he could play a pivotal role in upgrading faculty and research at the medical school. McKee was willing to try but needed significant funding with which to begin. He was named professor and chairman of the school's powerful Department of Medicine in late 1985 and within a month or two had found a major investor.

Though Larason was a rookie legislator and Drs Harley and Kem were political novices, after two years of hard work and learning from their mistakes, Larason's Oklahoma Health Research Act was passed and funded on June 13 (a Friday), 1986. It provided for a nine-member committee whose members were appointed by the governor to award small grants (less than thirty-five thousand dollars) to the best health-related research proposals in Oklahoma. And since some of the research, it was hoped, would spawn commercial applications, the committee was housed in the state's Department of Commerce.

Though the initial funding was only one million dollars, it was the commitment to research and devel-

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opment that counted, Larason said. And she predicted that the state's investment in the effort would grow substantially.

However, even Larason must have been surprised at how quickly the idea germinated among the state's business, education, and political leadership. Within a year, the legislature had incorporated the modest beginning into an expanded, more comprehensive framework, still within the commerce department, called the Oklahoma Center for the Advancement of Science and Technology, OCAST.

A substantial component of OCAST was to be the creation of three Centers of Excellence intended to promote research and development. They were each to be funded by approximately ten million dollars in state and private matching money spread over five years. The centers had to focus on a theme and involve a collaboration of institutions.

Dr McKee played an important role in the planning stages of these centers because the new state initiative complemented his own fund-raising effort as chairman of the Department of Medicine. In 1968, as an OU medicine resident interested in spleen transplants, he had applied for a five thousand dollar research grant to a new Tulsa foundation established by oilman W. K. Warren. He was turned down. But after returning to OU in 1985, the W. K. Warren Medical Research Center decided to make an annual

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### ***McKee and Dr John Sokatch wrote the proposal for the establishment of the Oklahoma Center for Molecular Medicine.***

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investment of nearly two million dollars in basic and clinical research under McKee's leadership in the Department of Medicine. (The Warren Center's executive director was and is the same physician who worried about Oklahoma's reliance on oil in the 1950s, Dr Robert Tompkins.)

Chairing the OCAST committee on the Centers of Excellence, the late Pascal Twyman, then president of the University of Tulsa, suggested that two of the centers ought to be developed from Oklahoma's strengths. The third, he thought, should involve an area of great potential that could be and should be developed for the 21st century.

McKee saw molecular biology in the latter category. "We had pockets of excellence around the state in terms of investigators, facilities, and equipment," he says.

Furthermore, since arriving at OU in late 1985, McKee and Dr William Thurman, president of the Oklahoma Medical Research Foundation, had been working to strengthen cooperation and collegiality between the institutions for their mutual benefit. As a result, researchers from both sides of Northeast 13th Street in Oklahoma City were sharing facilities and expertise as never before.

So McKee and Dr John Sokatch wrote the proposal for the establishment of the Oklahoma Center for Molecular Medicine (OCMM). Sokatch, an OU distinguished professor of biochemistry and molecular biology, was directing an effort to establish an endowed chair in molecular biology at the Health Sciences Center.

Their proposal was one of fifteen received by OCAST. All proposals were scored by multidisciplinary panels consisting of state and national leaders in their fields. As expected, three proposed centers of excellence were funded (to begin in mid-1989.) One involved manufacturing, another laser technology, and the third was the Oklahoma Center for Molecular Medicine.

The OCMM proposal was selected because:

- Biotechnology has unlimited commercial potential in medicine and fields such as animal husbandry, agriculture, and petroleum geology;

- Expertise in biotechnology was located around the state and the Centers of Excellence had to be multi-institutional collaborations (OCMM involves the OU Health Sciences Center, Oklahoma Medical Research Foundation, and the University of Tulsa);

- McKee had attracted considerable private funding from the W. K. Warren Foundation and additional support from the Presbyterian Health Foundation, so he had a big leg up on other competitors for required matching money. Actually, McKee says without the Warren support OCMM wouldn't exist.

But even those compelling factors wouldn't have meant much without a comprehensive coordinated program that was designed to last.

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**M**ost of America's biotechnology industries are located within a 50-mile radius of Boston and La Jolla, Calif. Since the state's goal, through OCAST, is to attract some of that business to Okla-



homa, how can it be done? The answer is to develop a critical mass of productive research investigators using state-of-the-art equipment and facilities—all within a framework designed for collaboration, revitalization, and dynamic growth. That is OCMM's *modus operandi*.

OCAST's financial commitment to OCMM covers five years (with an option for another five years), and while nobody is expecting miracles between 1989 and 1994, the center's foundation and framework already are in place. Still, years of nurturing will be needed before everything gels and the dividends may start rolling in. As McKee and others note, the impressive Research Triangle in North Carolina, which is OCMM's model for developing ties between research and industry, has been 35 years in the making.

Most of that nurturing in the last two years has been done by McKee, the principal investigator, and Dr Philip Comp, the director. Comp, an MD-PhD, came to OU in the mid-seventies with a group that was studying thrombosis and coagulation. He has conducted basic research projects individually and with the group and has run clinical trials, including a sizeable tPA study at Oklahoma Memorial Hospital.

Each man contributes unique but complementary talents and traits to OCMM. Though McKee oversees every aspect of the center, his connections with influential people throughout the state and nation and his ability to win private support for research and related programs (such as the establishment of the Oklahoma School for Science and Mathematics) have been crucial. Comp is a master of handling the public relations. Unprepossessing, enthusiastic, garrulous, and wry, Comp has a knack for communicating with all sorts of Oklahomans who could benefit from knowing about the center, namely students, college professors, other research investigators, and even business executives.

He says his main responsibility is "identifying people who should be working together" and then facilitating those matches. "Small science doesn't make it anymore," he says. "The most productive people are part of a highly interactive group and that's what the center should be."

For example, Comp describes two potentially useful collaborations involving the ability to identify and sort different cells. One involves identifying and eliminating all cancer cells from a patient's own bone marrow after it has been irradiated but prior to reinfusion. The other has to do with isolating a fetus's red blood cells from the mother's blood for genetic

testing, which may obviate the need for amniocentesis.

In each case, the clinicians are at the OU Health Sciences Center but the researchers with the expertise to identify the cells in question are at the Chapman Institute of Medical Genetics Research in Tulsa. Linking them is OCMM's Flow Cytometry and Cell Sorting Laboratory, directed by Dr Jim Phillips. The lab's three hundred twelve thousand dollar device, the only one of its kind in the state, features lasers which excite (thereby illuminating) fluorescently tagged antibodies. "But the unique feature of the machine," Phillips says, "is the ability to extract from the 'soup' only the sample the researcher wants, and it will be 99% pure."

Phillips brought his expertise to the center almost two years ago from the M. D. Anderson Cancer Research Center, near Austin, Texas. Phillips says this device is the Cadillac of flow cytometers, but the

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***"Students energize research programs," McKee says. "The beauty of this approach is that OCMM is priming the pump, so to speak."***

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charge for its use is nominal and should be picked up by the investigator's funding agency; the plan is to make the lab as close to self-sustaining as possible.

The same is true for OCMM's other six core labs. McKee says these labs "put us on par technologically with any institution in the nation and that's the way it has to be if we are going to compete."

Just three years ago when OCMM was launched, "Oklahoma was way behind in major state-of-the-art equipment," McKee says. So, much of the initial OCAST funding went toward the establishment or bolstering of these essential core labs. That included not only expensive devices like the flow cytometer but also building renovations and salaries for core lab directors, lab techs, and post-docs.

Simultaneously, McKee and members of OCMM's operating committee were beginning to address the need (common to any successful science program) of developing solid tiers of participants—from novices to the most senior investigators. "Oklahoma already



had many productive, competitive investigators, and the center was going to build on them," McKee says. "It wasn't going to be a rehab project for unsuccessful scientists."

To attract other outstanding scientists, "we decided to wrap our existing endowed chairs into the center so that the positions would have a permanent funding source," McKee says.

By Spring 1992, four of the center's eleven endowed positions had been filled. The endowments range from a half million to two million dollars, and eight consist of state-private matching money producing straight revenue. Three are within OCAST's Eminent Scholars program, in which the privately funded endowments produce revenue that is matched by the state at two to one. For example, 8% interest on a half million dollar endowment annually produces forty thousand dollars, which the state doubles.

Such enticements work. Last year, Dr Lela Lee, a dermatologist with a national reputation for her research on the immunology of neonatal lupus, accepted the endowed position established by the one million dollar Herzog Chair. Still, the endowed chair, she says, wasn't the only reason that she left the University of Colorado's highly respected dermatology department after eleven years. She also credits the presence of OCMM's seven excellent and essential core labs and notes that OCMM helps support her own lab with equipment and a post-doc's salary.

Just down the hall from her lab at OMRF are two other nationally known lupus researchers who, like Lee, have been studying the role in the lupus diseases of an auto-antibody called anti-Ro. They are Drs Morris Reichlin and John Harley (yes, the same Harley who helped get the state involved in research in 1986), who are both OCMM investigators and have joint appointments with the OUHSC and OMRF.

Though Lee's lab in March 1992 was just getting rolling, she says her collaboration with Reichlin and Harley will enhance the total effort.

"That's exactly what we're (OCMM) trying to do," Comp says. Another purpose, he says, is to "create jobs, and we're already doing it. Look, when (Dr) Richard Cummings arrived this year from Georgia, he brought with him seven graduate students and three post-docs. Counting him, that's eleven new jobs resulting from an endowed chair."

Cummings, a well-funded expert on the arcane but vital area of carbohydrate chemistry and physiology, fills the seat in the two-million-dollar Ed Miller Chair. "We were lucky to get Richard Cummings," Comp says, "but with the establishment of the mo-

## OCMM's Core Facilities

**The Molecular Biology Resource Laboratory**, directed by Dr Ken Jackson, provides the DNA probe necessary to pull out the gene that the researcher wants to isolate.

**The Fluorescence Imaging Laboratory**, directed by Dr Robert Fugate, provides stunning high resolution and contrast views inside living cells as they function and communicate.

**The Flow Cytometry and Cell Sorting Laboratory**, directed by Dr Jim Phillips, enables researchers to isolate only the cell or piece of the cell that they want, and it is virtually pure.

**The Molecular Pathology Laboratory**, directed by Dr Terry Dunn, provides a tutorial of sorts to researchers on how to isolate, analyze, and sequence DNA. It also provides tissue samples (from surgical procedures) necessary in detecting and examining abnormal genes.

**The Computer Facility**, directed by Dr Bruce Roe, is also called a gene bank in that it connects the researcher with the billions of data available on the genetic makeup of life. Data are updated daily.

**The Monoclonal Antibody Laboratory**, directed by Dr Eugen Koren, provides pure antibodies to virtually any antigen. It also serves as a safe repository for the monoclonals that may be invaluable to a researcher's career.

**The Transgenic Animal Laboratory**, directed by Dr Nancy Nadon, provides the capability of inserting a gene into a mouse embryo. As the embryo develops and the gene begins expressing, the researcher can trace the resulting pathophysiology. □

lecular medicine center we did what we had to do to even be in the ball game."

Another way of building a critical mass of productive research investigators is the home-grown method. So another component of OCMM is an innovative pathway into doctoral programs, which is based on the premise that many of Oklahoma's best and brightest students would choose careers in molecular medicine research with proper encouragement and support. And the majority of them would spend most of their careers in Oklahoma, again, with proper en-

couragement and support. As Comp says, "they already know Oklahoma is a good place to live, and their families and friends are here. We damn sure know that without enough support they will leave or enter some other profession because that is what's happened."

Any doubts about the correctness of the "home-grown" approach were dispelled in 1991 after McKee and Comp visited all twenty-four of Oklahoma's four-year colleges and universities. "We were promoting OCMM's new graduate pathways program and gauging interest among faculty and students," Comp says. "After our visits, we held a reception and kids from eighteen of the schools attended. And we got forty-five applications from around the state."

While that promotional and recruiting activity was continuing, OCMM accepted its first two students, Annette Dorheim and Mike Bovee in the fall of 1991. Up to ten students will be accepted this fall.

OCMM doesn't run the doctoral program but is "goosing graduate student training in molecular biology," as Comp colorfully puts it, by providing tuition waivers and thirteen thousand dollar stipends for each of the students' first two years of the doctoral study. Students enter unclassified and take the same core course and labs for two years.

By the end of the first summer, Comp says the students begin learning the art of research by initiating their own doctoral research. They also declare their major department and select a faculty research advisor who has agreed to pick up the student stipend after OCMM's funding ends.

"Students energize research programs," McKee says. "The beauty of this approach is that OCMM is priming the pump, so to speak. Requiring the faculty to rustle up grant money to pay stipends for the final two or three years of a student's doctoral study perpetuates the vitality of our program."

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**I**n the spring of 1992, OCMM's momentum seemed to be growing. Private and public support was impressive and appeared solid. The Warren investment in Pat McKee's leadership is now in its eighth year and within a decade likely will supplant OCAST funding as the major supporter of OCMM.

Between now and then, Oklahomans should begin seeing economic spin-offs and applications from the work of OCMM investigators. Some of these men and women predated OCMM here and formed its original foundation; many others (McKee has a list of

twenty-two) were successfully recruited by Oklahoma institutions in large part because of OCMM's existence.

A few of OCMM's investigators have patents and many others are in the filing process. Many scientists have made disclosures to their institutions prior to filing; others are filing for protection for their inventions.

To assist in the labyrinthine task of transferring technological innovations and discoveries to the marketplace, the Oklahoma Biotechnology Corporation was set up by OU, OMRF, and the Presbyterian Health Foundation as a 501c3, an Internal Revenue Service designation covering a non-profit organization that assists other non-profits.

Last year, director of operations Bill Aven examined 600 pieces of research technology for OU and OMRF. "Of those, about 10% have the potential to at least recoup the patent costs (about ten thousand dollars), while a few have multi-million dollar potential," Aven says.

Possible applications (of this research) range from improved diagnostic methods in fetal and maternal medicine to more effective AIDS treatments to better sunscreens. But Aven notes that the scientists who performed almost half of the research that he thought might be patentable had not even begun the patenting process. Thus, he is spending part of his time as a sort of in-service director, educating OCMM's investigators and other researchers across Oklahoma about technology transfer.

His main task, however, is to get biotechnology company representatives to the table with OMRF, OU, and other institutional officials in Oklahoma to negotiate licensing agreements. And through Aven's efforts or someone else's, company representatives are visiting OCMM investigators and their institutions virtually every week. Some licensing agreements have been signed within the last year and several more are expected to be in the next few months. □

#### The Author

Richard Green is a free-lance writer in Oklahoma City. He is best known to JOURNAL readers as the longtime author of the Leaders in Medicine biographies.



# Oklahoma's Future Health Care Strategy

Thomas P. Weil, PhD

With health reform being near the top of the nation's domestic agenda, nearly one-fourth of the state's population<sup>1</sup> without health insurance coverage, and Governor David Walters recently appointing a broad-based commission to study specific health care needs, a host of questions are being raised about where Oklahoma's health care delivery strategy might be heading in the future. A critical overlay to this complicated agenda is the fact that the American Medical Association,<sup>2</sup> the American Hospital Association, the Blue Cross/Blue Shield Association, the Health Insurance Association of America, and other provider groups; most public officials; many business and union leaders; and, other similar organizations have recommended that a national universal access plan for basic physicians and hospital benefits should be enacted. Such legislation would provide coverage to the two-thirds of a million Oklahomans who are currently without any health insurance. Yet, we are a far cry from any national consensus of how this should be accomplished.

The question, however, is no longer whether the US can expect in the 1990s to enact some major health reform measures, but most of these discussions surround such issues as: Who is going to be eligible for these benefits? How is this coverage to be financed? Does providing universal access ensure the delivery of care to the working poor and their dependents? Who should be responsible for administering

these benefits? And, finally, how are we going to contain the nation's rising health care costs? Each of these questions is worthy of a separate commentary in this journal. This overview, however, responds primarily to the governor's specific concerns as outlined in his charge to the commission, and then these issues are briefly discussed in the context of the current national health reform debate.

**Background Data.** Most noticeable in comparing Oklahoma's population and demographic data to US averages (Table 1) is the slower growth in the state during the past decade, a decreasing number of births (Table 2), and a higher percentage of families being below the poverty line and without health insurance, these two latter factors being closely interrelated. With the state's Medicaid eligibility criteria more stringent than the national average, no wonder that Oklahoma physicians and hospitals are faced with significant volumes of uncompensated care.

What may be fortunate for a state having a slightly higher percentage of its population 65 years of age or older than the national average, is that Oklahoma's hospital inpatient and ambulatory care utilization rates per 1,000 persons are significantly below national averages. In addition, during the past five years these rates have been increasing at a percentage below those experienced elsewhere in the US. What is adversely affecting the fiscal outlook of the state's 78 short-term hospitals, however, is a loss of 409 patients in their average daily census during the past five years and, concurrently, a below-na-

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tional-average percentage increase in hospital-based outpatient services (Table 2).

**Recruiting Family Practitioners to Rural Areas.** Although the total number of actively practicing physicians in the US has doubled during the past three decades,<sup>3</sup> the number of available family practitioners has decreased. This is far more noticeable in Oklahoma where there are 30.0% fewer physicians per 1,000 residents than the national average (Table 1). What has to be so worrisome for the future is that not only is the percentage of recent graduates entering such residency programs declining, but there is a tendency for these young family practitioners to bypass rural areas, where there is the greatest need based on physician-to-population ratios.

Improving reimbursement for the primary care doctors versus the subspecialists might entice a few more medical school graduates into family practice, but my experience would suggest that the difficulty in attracting these physicians to rural communities is more related to non-economic issues such as the perceived life-style for the doctor, the spouse, and the family; and, particularly, adequate night and weekend coverage, and the ability to confer daily with a broad spectrum of specialists on more complicated cases. Oklahoma's rural communities and hospitals are competing for family practitioners with HMOs that are now considered the cornerstone of most health reform proposals. Other attractions of these managed care plans include assuring the physician of an immediate place to practice and access to an insured patient population, a guaranteed income, night and weekend coverage, and qualified specialists readily available to accept referrals.

To provide more family practice physicians for Oklahoma, we may need to recruit more "Lone Ranger types" to medical schools and hope that they eventually become primary care specialists for our nation's rural areas—where there is such a great need for their expertise.

**Control Health Care Costs.** A combination of employers' costs for health insurance increasing at four times the current inflation rate, a public outcry for improved accessibility and equity of care, the net income of most primary care physicians plateauing, hospitals' bottom lines deteriorating, and the US spending an increasing percentage of its gross domestic product (GDP) for health care—all suggest that something needs to be fixed. Almost all Oklahomans are unequivocally opposed to returning to the overregulated health care environment of the 1970s and believe that the current market-driven strategy

**Table 1. Selected Population, Demographic, and Health Care Data, State of Oklahoma and US, Selected Dates, 1980-1990.**

Variable	Date	Oklahoma	US
Population change	1980-90	+4.0%	+9.8%
% 65 years of age & older	1990	13.3%	12.5%
% Non-white	1990	17.9%	19.7%
% Families below poverty line	1990	15.9%	13.5%
Birth rate	1988	14.6	15.9
Infant mortality rate	1988	9.0	10.0
Percent uninsured, under 65 years of age	1988	23.0	15.0
Hospital admissions/1,000	1990	121.4	125.5
Hospital ER visits/1,000	1990	280.0	348.9
Outpatient visits/1,000	1990	484.7	868.1
Physicians/1,000	1989	145	210
Medicare	1988	14.1	13.5
Medicaid	1988	8.4	9.5

Sources: American Hospital Association, *Statistical Guide*, Chicago: The Association, 1985 and 1991; and, US Department of Commerce, *Statistical Abstract of the United States, 1991*, Washington, DC: Government Printing Office, 1991.

needs more time to demonstrate its value. Some doctors already view the current Medicare reimbursement methodology or the HMOs (covering 5.5% of the state's population) micromanaging benefits for individual patients as virtually pure regulatory mechanisms, with only some meaningless rhetoric when they are referred to as the capstones of a competitive, market-driven health care strategy.

What is of concern in such discussions is that there is the increasing evidence, based on experiences in the US, Canada, and ten European countries,<sup>4</sup> that central fiscal control is the key factor to explain differences in health care spending across nations. Advocates of a national health insurance (NHI) plan<sup>5</sup> suggest that health care systems relying on some overall control of spending are generally more cost effective than those counting on more decentralized mechanisms of control. It is doubtful, therefore, that cost containment efforts for a universal access plan with basic physician and hospital services can be implemented by some cost sharing approach (ie, deductibles and co-insurance) or the

micromanaging of physician and hospital services by many managed care plans.

Physician and hospital rate-setting, in addition, has been unpopular in the US for several decades and its failures are relatively easy to illustrate. In the four-year period from 1985 through 1988, Medicare Part B allowed doctor charges to rise from \$19 to \$27 billion, an annual increase of 12.3%.<sup>6</sup> Allowed charge increases for medical specialties, such as cardiology and gastroenterology, mounted about 2.5 times faster than for the general medical specialties. Similarly, payments to ophthalmologists rose twice as quickly as payments to general surgeons, with other surgical specialists falling in between.

The overall evidence, moreover, is that during the 1985-90 period, the hospitals in the nation's five "most regulated states" (Connecticut, Maryland, Massachusetts, New Jersey, and New York) experienced similar increases in per discharge expense to the US average. What was most noticeable for the period between 1985 and 1990 in these five regulated states was a far smaller percentage increase in hospital emergency room and outpatient visits in comparison to national averages. This is because most of these facilities have a fiscal incentive for providing inpatient versus ambulatory care.

The Canadians<sup>7</sup> and the Germans,<sup>8</sup> although their approaches are frequently under severe criticism by groups in the US yearning to maintain the status quo, have been far more successful in containing health care costs by rate-setting. Their gross domestic expenditure for health is roughly one-fourth less than the US. It is unlikely this macromanagement approach can be replicated either in the US or Oklahoma in the foreseeable future for a number of reasons. US health care regulators, for example, have historically lacked any strong political constituency, are frequently forced to make politically prudent concessions to a few well connected providers, and the agencies are often threatened by possible repeal. Also, individual scrutiny of each hospital in a state, for example, is considered by most regulators often to be too burdensome and too contentious, so they seek quantitative-type approaches with fiscal incentives consistent with their own self interest that then are to produce a reasonably equitable distribution of available resources.

**Extending Child and Maternal Health Services.** The convergence of political, social, economic, and health factors is most readily illustrated in the delivery of child and maternal health care services among low-wage earners and their depen-

**Table 2. State of Oklahoma and US, Percentage in Selected Hospital Variables in the Five-Year Period, 1985-1990.**

Variable	Oklahoma	US
No. of beds	-09.3%	-07.4%
No. of admissions	-14.3%	-06.9%
Average daily census	-05.4%	-04.6%
Percentage of occupancy	+04.2%	+03.1%
No. of births	-11.7%	+12.4%
No. of surgical procedures	-00.9%	+08.5%
No. of emergency room visits	+11.1%	+16.1%
No. of outpatient visits	+38.1%	+45.9%
Full-time equivalent personnel	+14.7%	+14.0%
Total expense, adj. per admission	+52.8%	+52.4%
Total expense, adj. per inpatient stay	+38.9%	+49.3%

Source: American Hospital Association, *Statistical Guide*, 1986-1991, Chicago: The Association, 1986-1991.

dents. Forty-seven percent of the uninsured in one study<sup>9</sup> received their prenatal care through a health department and most (45%) often had their initial visit during the second trimester. While 85% of the expectant mothers with private insurance had their initial visit with a physician during the first trimester, those eligible for Medicaid and the uninsured saw a doctor during the first three months at a rate of 45% and 41%, respectively. In addition, irrespective of whether the child has "good" or "fair-poor" health, the uninsured's offspring receives considerably less physician services than those eligible for either private insurance or Medicaid benefits.

A study<sup>10</sup> to review the effects of a 1985 Tennessee Medicaid regulatory change that expanded eligibility coverage specifically for married, low-income women during pregnancy concluded that there were no concomitant improvements in the use of early prenatal care, birth weight, or neonatal mortality. There are numerous reasons why low-income mothers forego available prenatal care: racial, cultural, and language barriers; difficulty in obtaining transportation to prenatal services; inability to obtain reliable child care services; and patient behavior problems and the difficulty of some providers to react positively to those less economically and socially fortunate.

Although, in theory, the expansion of child and maternal care benefits should improve the health care of mothers and children, there are obviously other factors, such as level of education, stable employment, and availability of a strong, cohesive family unit that appear to be more important than the availability of health insurance benefits.

**Providing Continuous Coverage.** This



nation's first recession in 60 years to seriously affect the middle class has reminded us that an employee's health insurance and other fringe benefits for most Americans are tied closely to employment. This author in his 1963 doctoral dissertation<sup>11</sup> recommended that health insurance coverage for the unemployed worker and his dependents be financed by reducing the state unemployment insurance cash benefit an amount equal to reimburse the former employer the cost to maintain the worker's previous health insurance benefits. This approach has never been implemented and now is fiscally impractical, since most health insurance premiums would often be equivalent to one-third or more of the worker's unemployment insurance cash payment.

There still may be some value, however, in this concept of tying the continuation of the health insurance coverage of the unemployed to the worker's last employment. This approach seems to be preferred to the uninsured being covered by subsidized private insurance, a specially designed managed care plan, a state health risk pool, or an expanded Medicaid program. The private carriers and the managed care plans might "game" the legislation to obtain a preferred selection of risk; the state health risk plans have not worked well to date because of their high deductibles, high co-insurance features, and high premiums, reflecting the experience of the state risk automobile insurance pools; and, there are significant and well known administrative, financing, and quality of care issues with most state Medicaid programs. Therefore, the preferred choice may still be to continue the employee's health insurance benefits from his or her most recent employment.

A major issue for providing continuous coverage is where to obtain the funding to implement what to many might be both a necessary and an ambitious option.

**Coverage for Preexisting Conditions.** Many third-party payer insurance contracts in the US exclude pre-existing illness and disabilities from their coverage to reduce their fiscal risk. It is unrealistic to assume, for example, that the US will return to more community-rated premiums (ie, where everyone in the community pays roughly the same for equal coverage), since the health insurance industry, to meet current competitive conditions, is focused on experience rating. There could be significant advantages in implementing the German model,<sup>8</sup> where an employee and his family are members of the same sickness fund virtually from the start of full-time employment to death. But this approach, too, seems

to be alien to our current more competitive, market-driven environment. Also, except possibly in a much more general legislative context, our state elected officials would reluctantly raise taxes to finance the medical care services of those with pre-existing conditions, since there seem to be today domestic issues with higher political visibility.

In order to make the plan fiscally affordable and also not to compete with existing health insurance coverage, basic physician and hospital benefits under a universal access plan will probably exclude coverage relating to most previous or current illnesses or disabilities. More likely such benefits will be first mandated when the US enacts a universal access, comprehensive health insurance plan with one or a few payers of care, which could be a number of years hence.

**Concluding Comments.** American medicine is the best, and most innovative and expensive in the world, and most Oklahoma physicians and other health care providers strongly believe that there is more value in retaining the current approaches to the

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*(T)here is no such thing as free, comprehensive, high quality health care to everyone on demand at a readily affordable price.*

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organization and financing of health care. A major reason is that we have always been more suspicious of governmental control than citizens of other Western industrialized nations. Our inability to contain costs, together with 60 million Americans uninsured sometime during each year,<sup>12</sup> unfortunately, has led us nationally and in Oklahoma to consider some major health reform measures.

One possible scenario is that agreement will soon be reached nationally to reform the health insurance market for small businesses in order to reduce the number of uninsured. Concurrently, regulations could be promulgated that provide fiscal incentives to increase enrollment in managed care plans, since they are perceived as being able to improve accessibility and to contain costs for health care services.

Unfortunately, these modifications could still leave a significant number of persons uninsured or



underinsured. Health care expenditures could also continue to rise at 10% to 15% per annum, since managed care plans have been unable to demonstrate conclusively that they are able to control costs. We are, in addition, already facing a Congressional Budget Office forecast that Medicare and Medicaid costs by the year 2000 will soar to \$481 billion, roughly two-thirds of what we spend now for the health care services of 250 million Americans.

As we start to examine additional options, the Canadian single-payer system with its strong state control and annual global budgets for hospitals will be viewed as being too alien to our values of pluralism, individual responsibility, and our tradition of local citizens remedying their local problems. The US could then instead turn to the German quasi-private, quasi-public model whereby federal and state dollar limits are placed on total physician fees, and hospital capital and operating expenditures. Yet, doctors and facilities are able to negotiate reimbursement rates annually with third-party payers without direct government intervention.

At that point, it might well be more practical for an Oklahoma health services commission already being responsible to implement the federal plan to develop fiscal and other incentives to attract family practitioners to rural areas, to further control costs, to promote more child and maternal health services that might be tied to Head Start or other similar successful community education-social programs, and to ensure universal, comprehensive health insurance coverage—in pursuit of Governor Walters' present areas of concern and inquiry.

I would vote for some "incrementalism" in health reform with emphasis on covering the uninsured with basic benefits and possibly using more stringent global budgeting approaches to contain health care costs. This could include some additional regional networking of providers. If we are either unwilling or

unable to move in this direction, my concern would be that more radical health reform measures might be promulgated. This is because the political, economic, social, and health care pressures will have been built up to require more extreme remedies.

If we finally find ourselves following that path, I believe that most of the blame would lie with our President and state governors, the US Congress, and the state legislatures, Democrats and Republicans alike, most of whom have been unwilling to make the hard choices or to explain to the American people that there is no such thing as free, comprehensive, high quality health care to everyone on demand at a readily affordable price. We might first need a national and state-by-state health care strategy that outlines what compromises we are now willing to accept. □

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# Overview of Silicone Gel-Filled Breast Implants

From the American Society of Plastic and Reconstructive Surgeons

Over the past few months, the American Society of Plastic and Reconstructive Surgeons (ASPRS) has received hundreds of phone calls from physicians whose patients had questions about their breast implants. Some of the doctors wondered if ASPRS had a summary of scientific facts about breast implants—what is and is not known about the devices. This overview was prepared in response to those requests.

**T**he current FDA review of silicone gel-filled breast implants and the accompanying sensational media coverage has created an enormous amount of anxiety and confusion about the safety of the device. While the FDA has not formally approved silicone gel-filled breast implants, it is allowing continued use of the device under guidelines and is requiring manufacturers to conduct additional research studies to prove its safety and effectiveness. The following overview reviews the facts about the silicone gel-filled breast implants.

## History

Silicone gel-filled breast implants have been available since 1963, and it is estimated that 1 to 1.5 million women have breast implants. Like all medical innovations, silicone gel-filled breast implants have continuously evolved and improved. The original device was a thick, smooth-surfaced envelope of silicone rubber (elastomer) filled with a silicone gel. In the first few years of use, it was believed that the device would migrate if it was not “attached” to the body’s tissues. To accomplish this, patches of mate-

rial such as Dacron mesh or perforated silicone were attached to the back of the implant to encourage ingrowth of scar tissue. These patches were subsequently found to be unnecessary and were eliminated in the early 1970s. Changes have been made over the years to improve the implant. For example, in the early 1980s, the elastomer shell was reformulated to minimize the amount of low molecular-weight silicones that “bleed” through the envelope.

Many manufacturers also began adding texture to the surface of the envelopes. The first form of texturing was developed in the late 1960s, when a polyurethane coating was added to an otherwise standard gel-filled implant. Originally designed as a method of providing fixation, it eventually became apparent that the foam cover seemed to lower the incidence of capsular contracture. These implants were marketed in the early 1980s as the Meme® or Optimam® style. However, after critics alleged that the foam-covered implants emitted a carcinogenic breakdown product, they were voluntarily withdrawn from the market in April 1991.

## Reasons for Implant Surgery

Women who seek breast implants, especially for cosmetic reasons, do so despite society’s ambivalence toward a procedure that many consider a frivolous and unnecessary risk. Yet certain women feel such a deep, personal need for breast enhancement that often even their loved ones and physicians cannot appreciate the impact on their sense of wholeness and self-esteem. Women who share this need can



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truly understand the significant increase in the quality of life that breast implants can provide.

### **Silicone and Implant Characteristics**

There are distinct differences between elemental *silicon* and the polymer *silicone*. The silicones are a wide variety of silicon-based polymers of many formulations. Medical-grade silicone is usually a very pure silicon dioxide polymer (dimethyl siloxane).

The shell of a breast implant is made of a silicone elastomer, a rubber-like membrane, with the shell filled with silicone gel. Since a breast implant's silicone envelope allows slight permeation by the lower-weight silicones within the gel, a small amount of silicone will penetrate or "bleed" through the shell. In most implants, just a few drops are shed. Newer "barrier-coat" devices introduced in the early 1980s bleed at only one-tenth the rate lost by earlier models. Most of this silicone is incorporated into the scar capsule by macrophages; only minute quantities are transported to the lymph nodes by macrophages. While some immeasurable amount may escape into the general body tissues, this occurrence has never been documented.

This leakage of silicone should be put in perspective. All humans carry silicone in their bodies from a variety of sources. It is undetermined whether the small amount that bleeds through the envelope is a health risk. Silicone is considered one of the least reactive materials used in medical devices. For example, IV tubing and disposable needles and syringes are lubricated with silicone; and medications stored in stoppered vials contain a residual from the silicone used in the manufacturing process. Although silicone is hydrophobic, up to 30% may be injected with the medication. It is estimated that an insulin-dependent diabetic may receive as much as 25 to 30 grams over a lifetime. As for the silicone shell, there is no evidence to suggest that it has a different metabolic effect than any other benign foreign body.

In its solid form, silicone is used to coat pacemakers and to make medical tubing, prosthetic joints, hydrocephalus shunts, penile implants, Norplant®, and similar implanted drug-delivery systems. In addition, testicular implants are usually made of a silicone envelope filled with gel, just like breast implants.

Further, the "methicone" (simethicone or dimethicone) found in many drugs is simply medical-grade silicone. Di-Gel® and Mylicon® are examples of such over-the-counter medications; both are approved by the FDA, even for infants. Silicone is also used in

hair spray, processed foods, skin creams, and cosmetics. Whatever the form, silicone is a component in more than 500 medical products.

Biologically, medical-grade silicones provoke a straightforward, non-specific foreign-body response, resulting in typical microphage invasion, giant-cell formation, and eventual fibrosis.

### **Surgery**

The risks inherent in any surgery that involves anesthesia are also associated with breast augmentation and breast reconstruction, with the incidence comparable to that of all straightforward, elective procedures performed on healthy patients. Infection, bleeding, poor healing, etc, may all occur at a frequency similar to that for any "clean" surgery.

For the reconstruction patient, the risks of anesthesia and surgery with implants are less than the risks of the more complex method of reconstruction using the patient's own tissue. The presence of implants has never been shown to influence the course of a patient's cancer. Survival expectancy is not altered by post-mastectomy breast reconstruction.

Surgical insertion of the device(s) can be performed under local or general anesthesia and is usually an outpatient procedure. The implant can be placed either directly beneath the breast tissue or under the pectoral and/or serratus musculature. The incision for cosmetic augmentation can be peri-aureolar, axillary, or in the inframammary fold. For post-mastectomy reconstruction, the existing surgical incision is usually used, and the implant can be placed at the time of mastectomy or delayed until a later date.

### **Concerns Specific to Breast Implants**

**Capsular contraction** is the most common side-effect of breast implants. Normally, a surgical pocket is created for the implant that is somewhat larger than the device. A fibrous membrane, called a capsule, then forms around the implant. Under ideal circumstances, the pocket maintains its original dimensions and the implant "rests" inside, remaining soft and natural. However, for reasons that appear to be related to the individual physical characteristics of the patient, the scar capsule shrinks in some women and squeezes the implant, resulting in varying degrees of firmness. These "levels" of contraction are measured on a scale of 1 to 4: one is so soft that it is virtually undetectable and 4 is as hard as a grapefruit. This contraction can occur immediately after surgery or many years later and can appear in one or



both breasts asymmetrically. Current theories suggest that a low-grade, normally non-pathogenic, bacterial contamination may "trigger" some contracture, explaining its occasional occurrence.

Capsular contraction is not usually a health risk, but it can detract from the quality of the result and cause discomfort or pain. However, some women prefer a slightly firm bosom, and many even consider a severe contracture to be a minor annoyance. If capsular contracture becomes a problem, the physician may recommend surgically "scoring" the tight capsule of scar tissue around the implant or surgically removing this scar tissue altogether. Contraction can recur.

**Closed Capsulotomy.** For some women who have developed capsular contracture, a technique called closed capsulotomy can result in instant, dramatic relief. It involves a forceful squeezing of the breast, resulting in a tear of the scar capsule, allowing additional space for the implant and restoring softness. It is simple; there is often very little pain, and the result, when it works, is instantaneous. When successful this procedure eliminates the need for surgery and the risks and costs associated with a surgical procedure. The decision to undertake this procedure, as for any surgical procedure, should be decided by consultation and agreement between the physician and the patient.

In some women excessive force is needed to tear the capsule, which can cause pain and, sometimes, implant rupture. While the FDA states that closed capsulotomy should not be performed, some physicians, based on clinical experience, feel that closed capsulotomy is an appropriate treatment in some patients. However, patients must understand that closed capsulotomy could cause an implant to break and that surgery would be required to replace the implant. Unfortunately, in the rare patient who has a ruptured implant, closed capsulotomy can transmit loose gel into adjacent tissues. In addition, the technique does not always work, and even when it does, the contraction often recurs.

**Implant Rupture.** All medical devices are subject to failure. If an implant shell breaks, it may occur as a result of trauma, such as an auto accident, or normal activities, such as breast movement and compression. "Silent rupture" may go unnoticed but may be detected on routine mammography without outward signs or symptoms. If this occurs, free gel will usually be contained within the scar-tissue capsule surrounding the implant. Mammography is helpful in diagnosing rupture, but is not totally reliable.

Physical examination is also useful in detecting a broken device, although this is not 100% accurate either. Rupture should be suspected if there is a change in the look or feel of the breast, such as a persistent burning sensation on one side or an alteration in the softness, texture, or shape. On rare occasion, an injury can tear the scar envelope, and the gel can be driven into the subcutaneous planes. In these infrequent situations, the gel may be pushed into the tissue planes of the chest wall and down into the abdomen, the arm, or the breast tissue. Although there are isolated reports of silicone gel in the brachial plexus or the skin, resulting in neurologic signs or induration and deformity, these are extremely unusual occurrences and probably resulted from older implants with very thin gel.

Within two to six weeks, extravasated gel is encapsulated by new scar tissue. When this scar tissue forms septi, the gel is repeatedly subdivided by the ingrowth of scar septi into smaller and smaller microdroplets, resulting in a hard plaque that has been called a "granuloma." If this granuloma is located in the breast parenchyma, it can mask or mimic a tumor. This is one of the reasons why direct injection of liquid silicone into the breast is not recommended. Extravasation beyond the surgical pocket can produce some unpleasant physical deformities, lumps, and other masses. However, there is no medical rationale for removing all of this remote material if removal will cause further scar and deformity.

**Carcinogenesis.** No reliable evidence exists that the silicone in breast implants is carcinogenic. Two epidemiologic studies conducted on women who have had implants for 10 to 20 years have indicated that the incidence of breast cancer in this population is no higher than that in the non-implanted female population. These and other studies are continuing to track larger numbers of women over a longer period of time.

It is known that the polyurethane coating on one type of implant gradually hydrolyses into various breakdown products. Some are concerned that one of these products may be 2,4 trinitrotoluene (TDA), although the evidence that it is produced in vivo is questionable. Studies performed in the 1970s show that TDA produces hepatic cancers when fed to cancer-prone rats. However, the validity of these early experiments is now being questioned. TDA has never been documented to be a human carcinogen, although it is currently banned by the FDA for use in foods and cosmetics.

An FDA advisory panel convened in July 1991

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concluded that the potential risk of cancer from polyurethane-coated implants is most likely less than one in one million, which is less than the current human risk for liver cancer. The FDA has advised that there is no reason for asymptomatic women with these devices to have them removed, since the risks inherent in the surgical procedure itself are greater than any that may result from the implants remaining in place.

**Cancer Detection.** A concern associated with breast implants is the possibility that these devices can interfere with the detection of early breast cancer because they may "hide" suspicious lesions in the breast during mammography. The implant itself is radio-opaque, and it compresses the surrounding breast tissues. As a result, there is at least a theoretical chance that an implant will compromise mammography and delay detection until a mass is palpable, particularly if some capsular contracture is present. This information suggests that capsule contraction should be corrected whenever possible. However, two studies have shown that, to date, the stage of breast cancer detection in women with implants appears to be identical to that found in the overall population.

Mammographic techniques have improved dramatically in the past few years and special methods of examination now enable the mammographer to minimize the amount of breast tissue that is "hidden" by the implant. The American College of Radiology,

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***It is the opinion of many that the FDA's concern over safety is exaggerated . . .***

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the American Cancer Society, and the American Society of Plastic and Reconstructive Surgeons agree that a woman with breast implants should have routine mammography at the same rate as a woman without implants. However, it is recommended that a woman with implants avoid screening clinics where only two routine views of the breast are taken. A woman with breast implants should be referred to mammographic facilities that are accredited by the American College of Radiology, including staffs who are familiar with the special "Eklund" views required for adequate evaluation of the augmented breast. If possible, she should return to the same facility for all

future mammograms to be monitored consistently. She should also be aware that the cost of this type of mammography is higher, since usually a minimum of four x-rays are required to adequately evaluate the breast, and that the amount of radiation exposure is also higher due to the additional views.

**Rheumatic Disorders.** There have been a few reports and substantial speculation that there could be an association between silicone and autoimmune or rheumatic disorders. Scleroderma and lupus are the rheumatic disorders considered most likely to be caused by external substances, such as certain toxic chemicals. Scleroderma is an extremely rare disease, with an estimated 10,000 cases reported in this country. Fewer than 100 reports in the medical literature have associated breast augmentation with rheumatic disorders. Since scleroderma, lupus, and similar diseases are rare, they are difficult to research and require large-scale epidemiologic studies to determine if there is an association with implants. There are two such studies now underway, and results will probably be available in one to three years.

After hearing all of the evidence that might suggest a connection between silicone breast implants and rheumatic disorders, the rheumatologist selected to sit on the FDA's February 1992 advisory panel concluded that "if we're going to be scientific and honest at this point, we would have to say that there is no data that implicates any defined—or as far as I'm concerned, undefined—systemic, rheumatic disease with breast implants."

In addition, a consensus panel that met on June 25, 1990, on this subject, organized by the American Society of Plastic and Reconstructive Surgeons, concluded that "if there is a connection, it must occur in a tiny number of women who have a genetic predisposition for the disease and for which there is no test."

There are several reports that rheumatic symptoms disappear when implants are removed. This has not occurred consistently, and the improvement may be nothing more than a placebo effect or the results of other forms of treatment.

**Pregnancy and Lactation.** There is no evidence that silicones have any teratogenic or mutagenic effect. All animal studies to date show no evidence of birth defects. There is also no evidence that breast implants interfere with lactation, and many women with implants have successfully nursed. Some small-scale unpublished studies have shown that there is no silicone found in the breast milk of women with implants. An anti-colic medication com-



monly prescribed for infants, Mylicon®, contains silicone.

There is also concern that the breast milk of a woman with a polyurethane-covered device may contain TDA. The testing used to support this speculation is widely considered to be unreliable.

### Laboratory Studies

There are no laboratory tests that provide any reliable information concerning the presence, extent, or consequences of small amounts of silicone in the blood, urine, or other body fluids. Some entrepreneurial laboratories are marketing tests that imply that they will provide information about effects of silicone in the body. It is important to note that these tests detect elemental *silicon*, which is normally present in blood and tissues, with its concentration varying greatly with an individual's diet. The silicon levels found in blood, urine, and feces have no known relationship to *silicone* content. Silicone is not known to chemically degrade in the body system.

As with any disorder, laboratory testing should be symptom-specific or disease-specific. Patients should be discouraged from having unnecessary tests that have questionable meaning and may serve only to confuse or reinforce anxiety.

### FDA Actions

At the conclusion of FDA hearings in November 1991, an FDA advisory panel concluded that "there is no evidence that these implants are unsafe, but there is also insufficient evidence to prove safety." The panel also concluded that the devices have significant benefit for both cosmetic and reconstructive patients, and that they should be available to all who wish them.

However, on January 6, 1992, FDA Commissioner David Kessler called for a voluntary moratorium on the use and distribution of silicone gel-filled breast implants. A second hearing of the advisory panel was called for February 18–20 of that year. The panel revised its earlier decision and recommended stricter controls on the device for cosmetic patients, but full access for women desiring reconstruction.

On April 16, 1992, FDA Commissioner David Kessler confirmed the advisory panel's recommendations. He announced that implants will be widely available for reconstruction, but only a small number of women wanting gel-filled breast implants for cosmetic augmentation will be allowed to have them, and only through strictly controlled, investigative protocols. All women receiving implants must be

recorded in a registry and participate in ongoing research studies. Women who have an "urgent need" for a silicone gel-filled implant will have immediate access to the device. Three groups of women were defined as having "urgent need": women with expanders, ruptured implants, and those facing mastectomy who want reconstruction with a silicone gel-filled breast implant and for whom a saline-filled implant would not be a suitable alternative.

After 30 years of clinical experience, silicone gel-filled breast implants, for cosmetic purposes, will revert to investigative status. From a legal perspective, the pre-market approval applications (PMAAs) of the manufacturers have been extended for women needing implants for reconstructive surgery, and denied for those wanting cosmetic breast augmentation. It is the opinion of many that the FDA's concern over safety is exaggerated and that its actions will deny women control over their medical decisions and their right to choose.

Saline-filled implants continue to be available, but will be subjected to a similar FDA review in the near future.

### Insurance Coverage

It is not known if the FDA's decision on silicone gel-filled breast implants will affect a patient's ability to obtain insurance coverage in the future. Some carriers will not insure women with implants while others are excluding coverage for any breast disease for a woman who has implants. It behooves physicians to act as patient advocates and vigorously protest actions by carriers that impose arbitrary and unfair exclusions.

### Summary

It is the position of the American Society of Plastic and Reconstructive Surgeons that the FDA and the media have dramatically overstated the risks of silicone gel-filled breast implants, particularly the possibility of systemic disease, causing great concern among the women who have these devices. Paradoxically, the FDA has stated that it does not feel there is sufficient risk to justify removal of the implants in asymptomatic women who already have them in place. □

Prepared by the ASPRS Breast Implant Task Force, June 1992.



# Child Abuse and Neglect Fatalities in Oklahoma: Results of a Five-Year Study

Terri M. Gallmeier, PhD; Sheila M. Thigpen, BS; Barbara L. Bonner, PhD

Homicide is the only leading cause of child hood death that has increased in the past 30 years.<sup>1</sup> In Oklahoma, child abuse deaths have more than doubled since 1981, from 13 to 38 deaths. There was a 111% increase from 1990 to 1991, with the child death rate at an all time high in 1991. Based on these rising rates, the Oklahoma Department of Human Services (DHS) requested that the Child Abuse Education and Research Office, Department of Pediatrics, University of Oklahoma Health Sciences Center, study the factors surrounding child abuse and neglect fatalities in Oklahoma. A five-year, retrospective study was conducted covering the years 1987 through 1991.

The following are a few of the results obtained from the five year (1987–1991) study:

(1) 135 children died from abuse and neglect in Oklahoma;

(2) More children died from head trauma than from any other form of abuse;

(3) Shaken baby and general neglect were also significant causes of child fatalities;

(4) Children at highest risk of fatal abuse or neglect (43%) are infants age 1 and under; 54% of the victims were less than 2 years of age;

(5) 57% of the victims were male; 43% were female;

(6) In cases where alleged perpetrator relationship to victim was known ( $n=95$ ), 51% of the children were killed by their father, step-father, or mother's

boyfriend acting alone; 25% of the children were killed by their mothers acting alone;

(7) Minority children died at higher numbers than predicted by the population figures;

(8) 84% of the child death cases were not currently involved and 88% of the cases had no current or previous involvement with Child Protective Services;

(9) There was no significant difference in child death rates between urban and rural counties.

In summary, young, male children are at significant risk to die as a result of child abuse and neglect in Oklahoma. Further, the overwhelming majority of the children who died were not, nor had they been, involved with Child Protective Services. This indicates that the prevention of child deaths in Oklahoma will be a difficult task as no protective agency is typically involved in overseeing the child's safety.

The results of this study will be published by the Oklahoma Department of Human Services and copies will be available upon request. A prospective study of child deaths is currently being conducted in an attempt to delineate factors that can assist professionals in recognizing children at significant risk for abuse-related fatalities. □

## References

1. Ewigman B, Kivlahan C. Child maltreatment fatalities. *Pediatric Annals*. 1989; 18:476-481.

## The Authors

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## Fall seminars to explain CLIA regulations before inspections begin

A series of seminars on the new Clinical Laboratory Improvement Act (CLIA) regulations has been slated for this fall. The series is sponsored by the Oklahoma State Medical Association, the Oklahoma State Department of Health (OSDH), and the Oklahoma Osteopathic Association.

Seminars will be conducted by representatives of the OSDH, which has contracts with the Health Care Financing Administration (HCFA) to survey and certify medical laboratory facilities in Oklahoma, as required by CLIA. CLIA regulations became fully effective September 1, 1992.

The department has said it will conduct the entire series of seminars before beginning on-site inspections. This will give physician office personnel time to attend a seminar before inspections begin in 1993.

All laboratories, including physician offices, that test human specimens for the purpose of diagnosis and treatment are subject to the CLIA provisions.

The seminar schedule is as follows:

**Afton**, Sept. 15, Northeast Area Vo-Tech, Highway 69 North;

**Broken Arrow**, Sept 16, Tulsa County Area Vo-Tech, 4600 South Olive;

**Muskogee**, Sept. 17, Indian Capital Vo-Tech;

**Woodward**, Oct. 6, High Plains Area Vo-Tech, 3921 34th Street;

**Enid**, Oct. 7, St. Mary's Hospital, 305 South 5th Street;

**Ponca City**, Oct. 8, Pioneer Area Vo-Tech, 2101 North Ash;

**Burns Flat**, Nov. 17, Western Oklahoma Area Vo-Tech, 621 Sooner Drive;

**Lawton**, Nov. 18, Great Plains Area Vo-Tech, 4500 West Lee Boulevard, Room 301;

**Ardmore**, Nov. 19, Southern Oklahoma Area Vo-Tech;

**Oklahoma City**, Dec. 8, Francis Tuttle Vo-Tech, 12777 North Rockwell;

**Ada**, Dec. 9, Pontotoc County Area Vo-Tech, 1830 East Arlington; and

**McAlester**, Dec. 10, Pontotoc County Vo-Tech, 1830 East Arlington.

Workshops will be in the center's conference room unless otherwise noted. Registration is \$25 per person and there is a limited enrollment of 100 people per seminar. Each person will receive a copy of the February 28, 1992, Federal Register. Additional seminars will be scheduled if necessary.

Brochures with details and registration information were mailed to all state physicians in early August. Anyone still needing information may call Debbie Thurmond at the OSMA, (405) 843-9571 or 1-800-522-9452.

□

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## Not Politics As Usual

Robert W. Baker, III  
OSMA Associate Director

On November 3, 1992, voters in Oklahoma, along with the rest of the country, will go to the polls to elect or to defeat thousands of individuals wishing to serve in public office. However, these elections will not be politics as usual. The biggest changes clearly will be in the make-up of the House of Representatives in the United States Congress. To date, more than 70 incumbents in Congress have said they will not return to serve in the 103rd Congress. This figure is important as it will create the largest number of "open" seat races in this century. Once you add those seats in Congress that are expected to change hands, it is easy to see why experts are predicting the make-up of Congress will contain 130 to 150 new faces.

In Oklahoma, difficult elections are expected as well. The entire Oklahoma House of Representatives must run for reelection, as well as one-half, or 24 seats, in the Oklahoma State Senate. The contests are wide and varied, but the "themes" of most campaigns seem to be the same... time for change. Why, even the incumbents are pushing for change.

I would guess that there is no campaign in this country where health care is not an issue. Thus, in a sense, when we go to the polls we will be casting our vote for those individuals who will change the way physicians practice medicine.

Should every American be guaranteed basic health care coverage? How do we provide expanded health care coverage? How should we pay for universal health care coverage? Do we retain Medicaid? What level of health care benefits should be covered? How do we control health care costs? Who should administer a national health care plan?

These are the questions being asked of President Bush and Governor Clinton. Similarly, every legislator, US Representative, and Senator has an answer, but is it *our* answer?

The November elections will, without question, be the most important elections for organized medicine. The medical community must be involved. We must work the campaigns and contribute our money. We truly must make politics our part-time profession because those elected in November will be the individuals the OSMA and AMA must work with to solve the nation's health care dilemma.

It is not politics as usual. As a physician you must

know your legislator. If you do not make the time to get to know your elected official, he or she will not make the time to ask your opinions prior to that all-important health care vote.

If we truly are "physicians dedicated to the health of America," we must be prepared to fight for our profession and the well-being of our patients. We must get involved politically.

Prior to November 3, we must:

- **Register to vote.** It sounds obvious but you would be surprised who is not registered.

- **Find out who your legislator is.** Chances are you will have both your Senator and your Representatives up for elections.

- **Learn the health care positions of your legislator.** Call your legislator and find out or call the OSMA or OMPAC.

- **Join OMPAC**, the Oklahoma Medical Political Action Committee.

On November 3, we must:

- **VOTE!!!!**

- **Remind a colleague to vote!** Once again, you would be surprised—or maybe you wouldn't.

As physicians and auxiliaries, we must get involved and stay involved. State legislators and US Senators and Representatives, now more than ever, are listening to their constituents. Become a loud voice for organized medicine.

*Election year 1992 will not be politics as usual!*

□

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## Educational AIDS exhibit to tour the nation's science museums

The National AIDS Exhibit Consortium has designed museum exhibits that teach the public how to avoid becoming infected with the human immunodeficiency virus.

The AMA is a founding member of the consortium, which developed the interactive videos and display panels with funding from the Centers for Disease Control's National AIDS Information and Education Project.

The exhibits are now being previewed at the Hall of Science in New York, Museum of Science and Industry in Chicago, California Museum of Science and Industry in Los Angeles, and Exploratorium in San Francisco. After an evaluation period, the displays will tour the major science museums in the United States.

□

Oklahoma State Department of Health

## Today's health care providers need to boost environmental awareness



The elevated environmental consciousness of today's public translates into an increasing expectation for preventive and protective measures by the health care establishment. An increased awareness of adverse environmental health effects has resulted in a need for health professionals to improve their ability to recognize environmentally related disease and injury. Most physicians, however, have had little formal background in environmental and occupational health.

The role of the primary care physician in environmental and occupational medicine was recently addressed by a committee convened by the Institute of Medicine of the National Academy of Sciences. The committee recommended that physicians improve their ability to identify conditions caused by environmental contaminants, to obtain histories that include environmental risk exposure, and to make appropriate diagnoses and referrals.

In addition, these issues are addressed in *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*. The objective for the year 2000 is to increase to at least 75% the proportion of primary care providers who routinely elicit occupational health exposures as a part of patient history and provide relevant counseling.

In recognition of these needs, the Oklahoma State Department of Health (OSDH), with funding from the US Agency for Toxic Substances and Disease Registry, implemented a program to support continuing medical educational activities for physicians concerning human exposure to hazardous substances in the environment. A variety of approaches is available, including fact sheets, case studies, resource manuals, seminars, and grand rounds presentations.

One of the challenges in evaluating a potential environmental health problem is that some symptoms may be the same as effects caused by other

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Roy Oliver Kelly, Jr., MD	October 22
Lowell Francis Thornton, MD	October 22
Lillian Marie Hoke, MD	October 25
Irwin Hubert Brown, MD	October 27
Harold Houston Jones, Jr., MD	October 27
Francis Ray First, Jr., MD	October 28
Robert W. Kahn, MD	October 30
Charles Hugh Wilson, MD	October 30
George Kellogg Stephens, MD	November 4
Edward M. Farris, MD	November 22
Weldon Keiller Haynie, MD	November 25
Samuel Richard Fryer, MD	November 30
William Thomas Snoddy, MD	December 3
Philip George Joseph, MD	December 20
Charles Patrick Kirkland, MD	December 24

### 1992

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Bruce Ratliff Hinson, MD	January 24
Louis Carroll Taylor, MD	February 3
Earl Russell Muntz, MD	February 4
Claude Marion Bloss, Jr., MD	February 24
Oliver James Hagg, MD	March 31
Francis Patrick Cawley, MD	April 17
Don Horatio O'Donoghue, MD	April 20
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John L. Plewes, MD	June 21
David Lloyd Edwards, Sr., MD	June 23
Harlan Thomas, MD	June 30
Mark Donald Vanderslice, MD	July 13
William Branch Renfrow, MD	July 21

## Awareness *(continued)*

conditions, such as stress and infections. Furthermore, some individuals may have a lower response threshold for a chemical's toxic effects, and may show such symptoms as headaches, nausea, inability to concentrate, fatigue, irritation, rashes—symptoms that could also occur without any chemical exposure or that could result from other illnesses. In addition, older individuals, children, pregnant women, the chronically ill, smokers, and people who follow poor diets may be more susceptible to the effects of hazardous substances.

Only a handful of diseases point to an occupational or environmental cause by their pathological manifestations alone. Examples include angiosarcoma of the liver and acroosteolysis, caused by vinyl chloride exposure, and mesothelioma from asbestos exposure. Rarely, if ever, do these diseases occur in the absence of exposure. A range of ordinary diseases, such as asthma, skin rashes, and birth defects may also result from occupational or environmental exposure. However, what distinguishes them as environmental illness is the cause, not the specific pathology.

Identifying disease caused by occupational or environmental exposures does not require an extensive knowledge of toxicology. What it does require is the recognition that diseases may be related to current or past environmental exposure. Physicians need, first, to suspect the possibility of environmental exposure and, second, to include the possibility in the differential diagnosis. Assessment methodology will be discussed in more detail in subsequent articles. Knowing how to evaluate suspected environmental illnesses clinically enables the primary care physician to play an important role in detecting and preventing disease.

More information on the Oklahoma State Department of Health's environmental health education program for physicians may be obtained by contacting Laura Beebe at (405) 271-5601.

## RE: HIV Testing and Reporting

Although it is well known that HIV and AIDS are reportable in Oklahoma, it is less known that such reporting directly affects the amount of federal funds received by the state. Funds for the Ryan White grants, which support both free HIV-related drug distribution through DHS and the early intervention clinics in our metropolitan areas, are directly tied to



## HIV testing (continued)

the number of AIDS cases that are reported. Therefore, it is especially important that physicians report HIV and AIDS. Although hospital infection control practitioners are excellent at reporting infected patients, persons may be infected for years before they are hospitalized. Similarly, laboratories are not as good a source of reporting as they are with other diseases, because many of the specimens are sent to laboratories anonymously.

The difference between *anonymous* and *confidential* testing is crucial. *Anonymous* testing means that the specimen will come into the laboratory without personal identifiers. *Confidential* testing means that personal identifiers are attached. In the latter case, the laboratory reports the name to the STD/HIV Division, and if the person is not in the database, the referring physician is contacted for more information. The OSDH database reflects only *confidential* tests, as this is the only way we can assure each person is only entered once (many infected persons are tested multiple times during their life). Therefore, these are the only persons who can be reported. Obviously, it would be easier to track the extent of disease in Oklahoma, as well as increase federal funds, if only confidential testing were allowed.

Why does anonymous testing exist? Many HIV-infected persons, especially homosexuals, are worried about anti-HIV discrimination. Despite the fact that the highest levels of confidentiality are maintained by the health department, they worry that

their HIV status will become public and that discrimination will follow, so they refuse to be tested by name. This despite the fact that OSDH files are kept locked behind an alarm system; that it is a felony to release any information, and the department does not, except under court order; and that the new anti-discrimination act specifically prohibits HIV-related discrimination. (Confidentiality is usually broken through friends and family.) Nevertheless, both discrimination and the concern about confidentiality still exist and will continue to drive anonymous testing.

Although federal funding is based on the number of AIDS cases, the AIDS definition is to be expanded; however, the date for that has been delayed. Currently the definition includes only persons infected with HIV who also have one of the 13 so-called indicator diseases, such as *Pneumocystis carinii* pneumonia. Soon it will also include HIV-infected persons whose CD4+ count is less than 200. The change in definition may increase AIDS counts by as much as 50%. In anticipation of this change, the Commissioner of Health has made CD4+ counts reportable from reference laboratories as a special study in Oklahoma. The new definition will make the reporting of HIV as essential as that of AIDS.

In summary, the OSDH encourages physicians to report to it any patient who is infected with HIV, regardless of whether they are currently categorized as having AIDS. Information about HIV or AIDS reporting can be obtained from the STD/HIV Division of the OSDH at (405) 271-4636. □

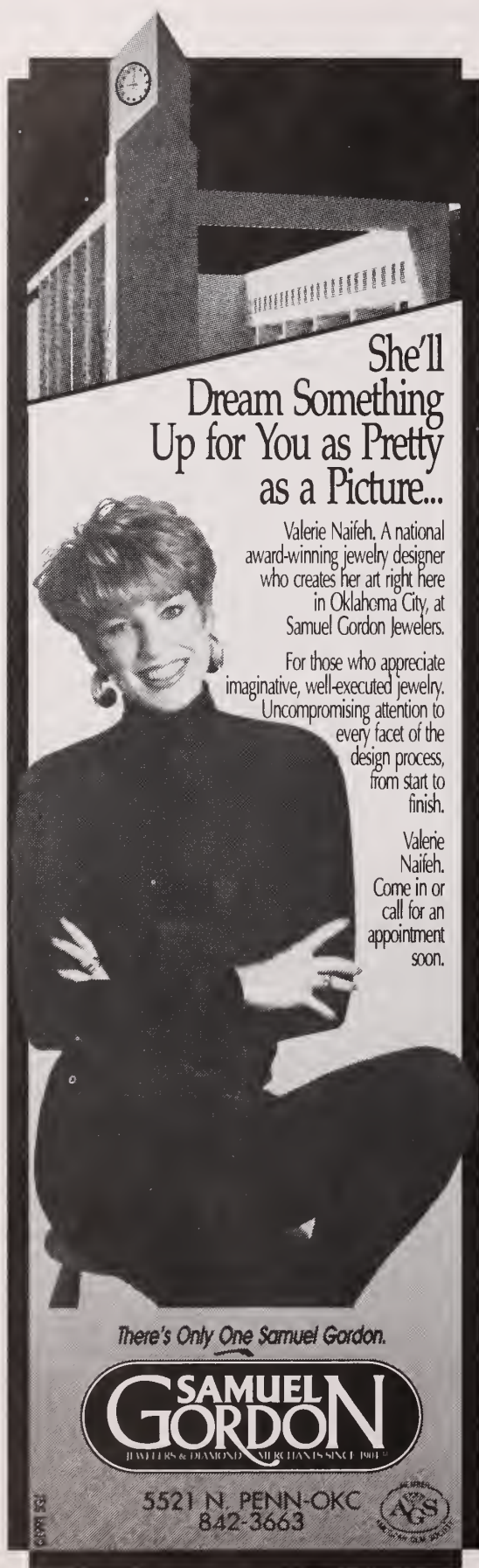
## AMA to sponsor Medical Staff Leadership Program October 2-3

The American Medical Association will sponsor "Interactions Medical Staff Leadership Program" next month for new chiefs of staff, medical staff committee chairpersons, clinical department heads, and other medical staff leaders.

The two-day program is intended to help these individuals develop their skills as arbitrators, facilitators, managers, negotiators, problemsolvers, and peacemakers. Participants will enhance the skills they need to successfully merge their clinical roles with their medical staff leadership responsibilities.

The program will cover such critical areas as credentialing, medical staff bylaws development, outcomes management, negotiation, group communications, conflict resolution, meeting effectiveness, parliamentary procedure, and peer review.

Site of the October 2-3 program is the Downtown Chicago Marriott. Cost is \$495 for American Medical Association members and \$595 for nonmembers. Discounts are available for groups of three or more registrants from the same medical staff. For immediate registration or information, call 1-800-262-3211. □



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## AMA supports EPA on smoking

The AMA has offered strong support for the Environmental Protection Agency's draft document "Respiratory Health Effects of Passive Smoking: Lung Cancer and Other Disorders." The report confirms that secondhand tobacco smoke is an environmental risk. In a statement sent to the EPA's Science Advisory Board, the AMA recommended that the Occupational Safety and Health Administration eliminate smoke exposure in the workplace. In addition to its effect on adults, secondhand smoke puts children at risk for respiratory illness. □

## DEATHS

### William Branch Renfrow, MD 1914 - 1992

OSMA Life Member William B. Renfrow, a retired anesthesiologist, died July 21, 1992, in Oklahoma City. Dr Renfrow was born in Pine Bluff, Ark, and was a 1950 graduate of the University of Oklahoma School of Medicine. He served two years as a lieutenant in the US Navy and was released in 1954.

### Mark Donald Vanderslice, MD 1963 - 1992

Mark D. Vanderslice, MD, died July 13, 1992, in Oklahoma City. A native of Jefferson City, Mo, Dr Vanderslice earned his medical degree at the University of Missouri, Columbia School of Medicine, in 1989. He was completing his postgraduate training in obstetrics and gynecology in Oklahoma City. □

## CLASSIFIEDS

Classified ads are 50 cents a word, with a minimum of \$25 per ad. A word is one or more characters bounded by spaces. Box numbers will be assigned upon request and will add 6 words to the total. Ads will not be accepted on the telephone or by fax. Payment must accompany all ads. Mail ad with payment to OSMA JOURNAL, 601 Northwest Expressway, Oklahoma City, OK 73118. Deadline is the first of the month preceding the month of publication.

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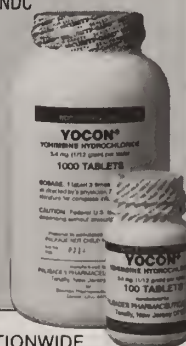
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### References:

1. A. Morales et al., New England Journal of Medicine: 1221. November 12, 1981.
2. Goodman, Gilman — The Pharmacological basis of Therapeutics 6th ed., p. 176-188. McMillan December Rev. 1/85.
3. Weekly Urological Clinical letter, 27:2, July 4, 1983.
4. A. Morales et al., The Journal of Urology 128: 45-47, 1982.

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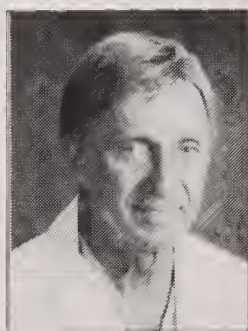
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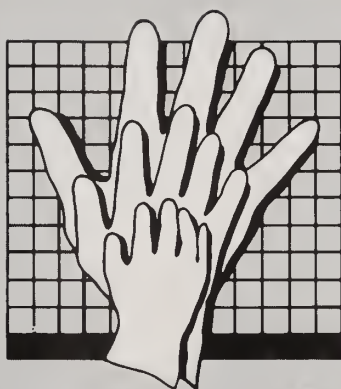


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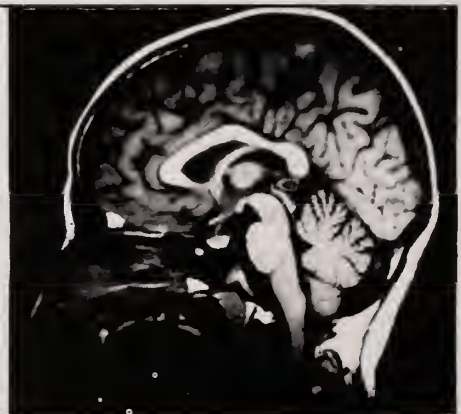


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All manuscripts should adhere to the style adopted by the American Medical Association as illustrated in *JAMA* and detailed in the AMA's *Manual of Style*. An abstract of 150 words or less should accompany each paper and should state the exact question considered, the key points of methodology and success of execution, the key findings, and the conclusions directly supported by these findings. Footnotes, bibliographies, and legends for illustrations should be on separate sheets. References are to be listed in the order of their appearance in the article.

#### Illustrations

Illustrations other than the author's will not be accepted for publication unless accompanied by written permission from the original source. Illustrations should be labeled with the author's name and must be numbered in the order in which they are referred to in the article. The quality of all illustrations must be in keeping with the quality of the magazine.

#### Reprints

Authors will receive reprint order forms from the Transcript Press, PO Box 6440, Norman, OK 73070-6440, with their galley. Other requests for reprints must be made to the Transcript Press within 30 days after publication.

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**T**his past year we, as members of the Oklahoma State Medical Association Auxiliary, have "cared enough to make a difference." This was the challenge President Susan Paddock presented to the auxiliary. There are many different ways members have demonstrated how committed they were to this challenge. Individual members volunteered their time and talents as representatives of the auxiliary to make a difference. Members organized programs to educate the communities about health issues to make a difference. The auxiliary influenced decisions made by the government to make a difference, and the auxiliary helped medical students and nursing students by providing financial assistance to make a difference.

Now at the beginning of a new auxiliary year we are committed to making a difference in the medical community as well as the communities in which we live. Through this commitment to legislative affairs, AMA/ERF, health promotions, and other programs of the OSMAA, we know that we can make a difference.

Legislative affairs will be an area of great concentration this year since it is an election year. Members are encouraged to become involved in the campaigns of their local, state, and national legislators. Only through this personal involvement can we have as much impact on the candidates. We have to work to let those representing us know that we are concerned about the health of the people in our communities and nation and that we are not just concerned about the fees and salaries of the health care providers. They need to know that we will be available after the election to provide support and information.

This year the OSMAA will emphasize the prevention of family violence through our health promotions committee. The AMAA has developed a program for use by the individual auxiliaries. It consists of a three-minute video and written material, which includes a script, a quiz, and information about family violence. Family violence is at epidemic proportions in our nation, and we have to become more aware of its impact on our society. Through this program we hope to make people aware of the scope of the epi-

demic and cause them to want to become involved in finding ways to stop it. This video is available to the counties through Barbara Jett, state health promotions chair. It can be used in a variety of ways: in auxiliary meetings, as community health projects, in schools, etc. We hope to educate many people as to the enormity of this problem.

We will continue to raise funds for AMA/ERF. We are committed to this project because of the continued escalating cost of medical education. Not only do the young physicians benefit from the monetary gain, but they benefit from the knowledge that there is an organization out there that truly cares about them and the future health care of their patients. As a result, we hope that they will in the future become involved in and support the AMA and AMAA. There will be more information forthcoming about our "Back to the Future" campaign to raise funds for AMA/ERF. We must help the new physicians so that medicine will continue to attract the brightest and best students.

This year we are also committed to our membership, whether it is an active member, a sustaining member, a member-at-large, or a resident/medical student. Oklahoma was one of the few states with an increase in membership this past year; in fact, we were able to take another delegate to the National Convention. We want to keep this momentum going. We need all physicians to encourage their spouses to join the auxiliary. Not everyone can be involved all the time, but the support of dues means that the worthwhile programs and projects of the auxiliary can continue.

We have renewed our commitment to the past and are reaching out in new and exciting directions to show the people of our communities that we are sincerely committed to providing them with health care information so they may have happier and healthier lives.

—Judy Critchfield  
OSMAA President



■ **The AMA Council on Ethical and Judicial Affairs** has issued an opinion on physicians' disclosing patient records to data collection firms. The firms typically ask physicians to provide computerized patient records in exchange for such incentives as computer equipment or software packages. Pharmaceutical houses use the physicians' prescribing information for marketing purposes. The council stated that the arrangements violate the principle of informed consent as well as the AMA's guidelines on gifts from industry.

■ **"Pressure Ulcers in Adults: Prediction and Prevention"** is the title of the most recent guideline issued by the Agency for Health Care Policy and Research (AHCPR), newest component of the Public Health Service. The guideline, an accompanying quick reference guide and patient guide are available free of charge. Write to AHCPR Publications Clearinghouse, Post Office Box 8547, Silver Spring, MD 20907, or call 1-800-358-9295. Other AHCPR guidelines issued since last March deal with reducing acute postoperative pain and detecting and treating urinary incontinence in adults.

■ **The Seventeenth Annual Fall Educational Meeting:** Current Concepts in Occupational Medicine will be held November 13-14, 1992, at the Sheraton Hotel in Norman, Okla. The meeting is sponsored by the Oklahoma College of Occupational Medicine. For information contact James W. Small, MD, MPH, 1923 East 21st Street, Tulsa, OK 74114, (918) 749-5895, extension 307. Dr Small is secretary-treasurer of the college.

■ **Under the leadership of now immediate Past President Sherry Strebel** (Mrs Gary), Oklahoma City, the American Medical Association (AMA) Auxiliary this summer approved a bylaw change that will rename the organization. When the change is ratified

at next year's convention, the group will become the American Medical Association Alliance. The new name is thought to more aptly describe the organization's relationship to the AMA.

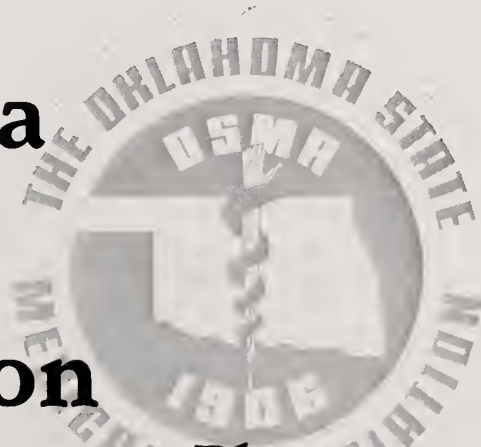
■ **Richard Allgood, MD, Lawton general surgeon**, has been named to the Board of Directors of the Oklahoma Medical Research Foundation (OMRF) in Oklahoma City. Dr Allgood, a partner in the Great Plains Surgical Clinic, was a member of OMRF's first class of Fleming Scholars in 1956.

■ **The JOURNAL would like to run news of your** professional achievements, upcoming seminars, or association activities. News items should be directed to the OSMA JOURNAL, 601 Northwest Expressway, Oklahoma City, OK 73118. Deadline for each issue is the first of the preceding month.

■ **Physicians seeking free medications for needy** patients can now obtain a directory of some 59 corporate programs that provide such services. Announced in early July, the directory is now being distributed across the country, and a toll-free hotline for physician use began operation on July 27.

"This project is designed to reach doctors who may not know about these programs (pharmaceutical industry's tradition of providing prescription medicines free of charge to physicians whose patients might not otherwise have access to necessary medicines). We look forward to working with the health care professionals to broaden patient access to important medicines," says Pharmaceutical Manufacturers Association President Gerald J. Mossinghoff. Physicians desiring a copy of the directory may write to: 1992 Directory of Prescription Drug Indigent Programs, Pharmaceutical Manufacturers Association, 1100 15th Street NW, Washington, DC 200005. The toll-free hotline is 1-800-PMA-INFO. □

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\*The recommended starting dose for Calan SR is 180 mg once daily. Dose titration will be required in some patients to achieve blood pressure control. A lower initial starting dosage of 120 mg/day may be warranted in some patients (eg, the elderly, patients of small stature). Dosages above 240 mg daily should be administered in divided doses. Calan SR should be administered with food.

†Constipation, which is easily managed in most patients, is the most commonly reported side effect of Calan SR.

‡Verapamil should be administered cautiously to patients with impaired renal function.

### BRIEF SUMMARY

**Contraindications:** Severe LV dysfunction (see *Warnings*), hypotension (systolic pressure < 90 mm Hg) or cardiogenic shock, sick sinus syndrome (if no pacemaker is present), 2nd- or 3rd-degree AV block (if no pacemaker is present), atrial flutter/fibrillation with an accessory bypass tract (eg, WPW or LGL syndromes), hypersensitivity to verapamil.

**Warnings:** Verapamil should be avoided in patients with severe LV dysfunction (eg, ejection fraction < 30%) or moderate to severe symptoms of cardiac failure and in patients with any degree of ventricular dysfunction if they are receiving a beta-blocker. Control milder heart failure with optimum digitalization and/or diuretics before Calan SR is used. Verapamil may occasionally produce hypotension. Elevations of liver enzymes have been reported. Several cases have been demonstrated to be produced by verapamil. Periodic monitoring of liver function in patients on verapamil is prudent. Some patients with paroxysmal and/or chronic atrial flutter/fibrillation and an accessory AV pathway (eg, WPW or LGL syndromes) have developed an increased antegrade conduction across the accessory pathway bypassing the AV node, producing a very rapid ventricular response or ventricular fibrillation after receiving I.V. verapamil (or digitalis). Because of this risk, oral verapamil is contraindicated in such patients. AV block may occur (2nd- and 3rd-degree, 0.8%). Development of marked 1st-degree block or progression to 2nd- or 3rd-degree block requires reduction in dosage or, rarely, discontinuation and institution of appropriate therapy. Sinus bradycardia, 2nd-degree AV block, sinus arrest, pulmonary edema and/or severe hypotension were seen in some critically ill patients with hypertrophic cardiomyopathy who were treated with verapamil.

**Precautions:** Verapamil should be given cautiously to patients with impaired hepatic function (in severe dysfunction use about 30% of the normal dose) or impaired renal function, and patients should be monitored for abnormal prolongation of the PR interval or other signs of overdosage. Verapamil may decrease neuromuscular transmission in patients with Duchenne's muscular dystrophy and may prolong recovery from the neuromuscular blocking agent vecuronium. It may be necessary to decrease verapamil dosage in patients with attenuated neuromuscular transmission. Combined therapy with beta-adrenergic blockers and verapamil may result in additive negative effects on heart rate, atrioventricular conduction and/or cardiac contractility; there have been reports of excessive bradycardia and AV block, including complete heart block. The risks of such combined therapy may outweigh the benefits. The combination should be used only with caution and close monitoring. Decreased metoprolol and propranolol clearance may occur when either drug is administered concomitantly with verapamil. A variable effect has been seen with combined use of atenolol. Chronic verapamil treatment can increase serum digoxin levels by 50% to 75% during the first week of therapy, which can result in digitalis toxicity. In patients with hepatic cirrhosis, verapamil may reduce total body clearance and extrarenal clearance of digoxin. The digoxin dose should be reduced when verapamil is given, and the patient carefully monitored. Verapamil will usually have an additive effect in patients receiving blood-pressure-lowering agents.

References: 1. Data on file, Searle. 2. Edmonds D, Würth JP, Baumgart P, et al. Twenty-four-hour monitoring of blood pressure during calcium antagonist therapy. In: Fleckenstein A, Laragh SH, eds. *Hypertension—the Next Decade: Verapamil in Focus*. New York, NY: Churchill Livingstone; 1987:94-100. 3. Midtbo KA. Effects of long-term verapamil therapy on serum lipids and other metabolic parameters. *Am J Cardiol*. 1990;66:131-151. 4. Fagher B, Henningsen N, Huithén L, et al. Antihypertensive and renal effects of enalapril and slow-release verapamil in essential hypertension. *Eur J Clin Pharmacol*. 1990;39(suppl 1):S41-S43. 5. Schmieder RE, Messerli FH, Garavaglia GE, et al. Cardiovascular effects of verapamil in patients with essential hypertension. *Circulation*. 1987;75:1030-1036. 6. Midtbo K, Laue O, Hals O. No metabolic side effects of long-term treatment with verapamil in hypertension. *Angiology*. 1988;39:1025-1029.

Disopyramide should not be given within 48 hours before or 24 hours after verapamil administration. Concomitant use of flecainide and verapamil may have additive effects on myocardial contractility, AV conduction, and repolarization. Combined verapamil and quinidine therapy in patients with hypertrophic cardiomyopathy should be avoided, since significant hypotension may result. Concomitant use of lithium and verapamil may result in an increased sensitivity to lithium (neurotoxicity), with either no change or an increase in serum lithium levels; however, it may also result in a lowering of serum lithium levels. Patients receiving both drugs must be monitored carefully. Verapamil may increase carbamazepine concentrations during combined use. Rifampin may reduce verapamil bioavailability. Phenobarbital may increase verapamil clearance. Verapamil may increase serum levels of cyclosporin. Verapamil may inhibit the clearance and increase the plasma levels of theophylline. Concomitant use of inhalation anesthetics and calcium antagonists needs careful titration to avoid excessive cardiovascular depression. Verapamil may potentiate the activity of neuromuscular blocking agents (curare-like and depolarizing); dosage reduction may be required. There was no evidence of a carcinogenic potential of verapamil administered to rats for 2 years. A study in rats did not suggest a tumorigenic potential, and verapamil was not mutagenic in the Ames test. Pregnancy Category C. There are no adequate and well-controlled studies in pregnant women. This drug should be used during pregnancy, labor, and delivery only if clearly needed. Verapamil is excreted in breast milk; therefore, nursing should be discontinued during verapamil use.

**Adverse Reactions:** Constipation (7.3%), dizziness (3.3%), nausea (2.7%), hypotension (2.5%), headache (2.2%), edema (1.9%), CHF, pulmonary edema (1.8%), fatigue (1.7%), dyspnea (1.4%), bradycardia: HR < 50/min (1.4%), AV block: total 1°, 2°, 3° (1.2%), 2° and 3° (0.8%), rash (1.2%), flushing (0.6%), elevated liver enzymes, reversible non-obstructive paralytic ileus. The following reactions, reported in 1.0% or less of patients, occurred under conditions where a causal relationship is uncertain: angina pectoris, atrioventricular dissociation, chest pain, claudication, myocardial infarction, palpitations, purpura (vasculitis), syncope, diarrhea, dry mouth, gastrointestinal distress, gingival hyperplasia, ecchymosis or bruising, cerebrovascular accident, confusion, equilibrium disorders, insomnia, muscle cramps, paresthesia, psychotic symptoms, shakiness, somnolence, arthralgia and rash, exanthema, hair loss, hyperkeratosis, macules, sweating, urticaria, Stevens-Johnson syndrome, erythema multiforme, blurred vision, gynecomastia, galactorrhea/hyperprolactinemia, increased urination, spotty menstruation, impotence.

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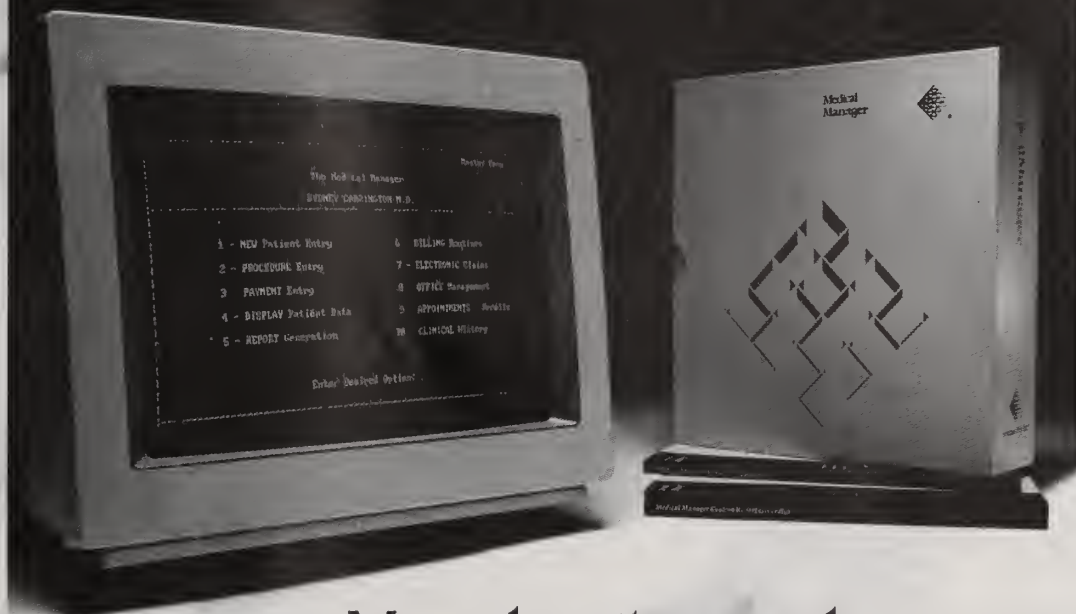
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Francis A. Davis, MD, Shawnee is the 22nd Oklahoma doctor to be honored as a Leader in Medicine. Story begins on page 484.

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## A Flawed System

At a recent assembly of the House of Delegates of the OSMA, President James D. Funnell briefed the house on current problems facing the medical profession. Among his trenchant remarks he stated: "Medicare is a flawed system." The president did not detail why the system is flawed, but presumed each of his listeners to know the system's deficiencies. Every physician, and especially those who practiced medicine before 1965, can supply a bitter and copious list of the defects in the Medicare system.

Medicare was imposed on the nation twenty-seven years ago, and it is probable that a majority of the OSMA House of Delegates have never had the freedom to practice medicine in a Medicare-free economy. Since the government regulations originated by Medicare are the principal reason for the present health care crisis, it is timely to list some of the reasons why Medicare is a flawed system.

Medicare is compulsorily attached to every citizen at the age of sixty-five, regardless of the citizen's need, means, or desires. Existing medical care arrangements are arbitrarily cancelled, supervised, and forbidden under penalty of law. The citizen's right to contract for an intensely personal service is expropriated without due process. In effect, this system captures every sick citizen into its administrative tangle, and prohibits private and completely voluntary contracts between the sick citizen and his physician.

There is no means test before the individual citizen is drafted into Medicare. Although billions of tax dollars are avulsed from the citizens—including the poor—to pay part of the medical bills of everyone over sixty-five—including the wealthy—there is NO means test to focus these expenditures on the citizens who need government aid. The poor are taxed to subsidize the rich. In a democracy, it is the climax of political immorality to tax the poor to give services to the wealthy, and this delinquency is the hallmark of the occult socialism present in the US government when Medicare was enacted. As an economic system, socialism has been discredited everywhere, but it remains inextricably woven into the Medicare/Medicaid regulations.

Medicare, in an attempt to further public acceptance, has ineptly tried to act like a medical insurance company, and this ploy has totally disrupted the discipline of the marketplace on the price of medical services. Before Medicare, the patient had to be convinced of the feasibility of a proposed therapeutic procedure, but now Medicare committees meet behind closed doors and decide the procedures to be compensated. Economic feasibility is subordinated to erratic and unchecked reimbursement decisions made by a clique unschooled in patients' needs. Now, neither patients nor physicians feel any personal responsibility for economic efficiency in the choice of services to be rendered. The responsibility of the citizen to spend money well has been subverted into a pathological dependency on an erratic government handout.

Will Rogers, the Oklahoma cowboy-philosopher, said: "The government is too important to leave to the politicians." And this good idea should be focused on our present health care crisis. The medical care of our US citizens is too important to leave to the Congress and a bureaucracy that has never attended medical school.

As the US is a democratic republic, we physicians should commit to the exorcism of the socialism included in our medical care system when Medicare was enacted. In essence, the delivery of medical care is an economic proceeding, and inequities should be solved by correcting the economic problems of our citizens. General medical care delivery problems will be solved by economic means and not by government programs and handouts. Presently, the political problem is to reach the disengagement of the government from the regulation of medical care, and physicians must guide our politicians out of this Medicare wilderness. All of our citizens must be released to return to the medical marketplace.

*Ray V. McIntyre, M.D.*



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## The Elections Are Coming

This is an open letter to all OSMA members and their spouses. I remind each of you that the Oklahoma campaign season is underway. With primaries and runoffs behind us, we now head down the home stretch toward election day in November. Never in the history of American medicine has so much been at stake as it is in the election of 1992. The Presidential election, numerous congressional elections, and state senate and house elections—all are vital since they will determine how you and I will practice medicine in the foreseeable future. What happens in the years ahead will be determined for the most part by who wins in November.

My plea to each of you is that if you are not already involved, please get involved today. As individuals, each of us has our preferences as to which candidate or candidates we contribute our time and financial support. The real issue, however, is that we become involved in a major way and not just as a token. Money is needed as well as your time to help with phone calls, signs, mailings, and office work.



The magic of elections in the United States is that you can back any candidate you choose. I urge you to contact your candidates today, and ask what you can do to be most influential in helping them in their election campaigns.

Why become involved? Because of the issues: fee-for-service medicine as compared to a national health insurance system with a one-payer program; malpractice and tort reform; care for the uninsured; and certainly no problem is bigger than seeing that senior citizens receive adequate health care. You and I must also do everything we can to see that every American has the opportunity to solve his or her health care needs.

I come to you as your president, knowing that the composite wisdom of medicine will lead us to the right choices on election day!

A handwritten signature in dark ink, reading "James F. Durrell M.D." The signature is written in a cursive style with a large, looping initial "J".



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# Laparoscopy: Direct Trocar Insertion Without Pneumoperitoneum

Saeed Mahmoodian, MD

This paper examines the technique and the results of direct trocar insertion without prior pneumoperitoneum in 538 cases of laparoscopy performed during a three-year period ended June 1990. The need for establishing a previous pneumoperitoneum is questioned. In entering the abdomen directly by the trocar, availability of a sharp trocar and maximum elevation of the abdominal wall facilitated by a relaxed and non-distended abdomen are the most important surgical points this author emphasizes.

During the last 20 years laparoscopy has in the United States become one of the most commonly performed surgical procedures. It has become an important and integral part of every gynecologist's practice. It is, therefore, essential to search for new avenues to minimize the risks associated with the procedure.

It is self-evident that visualization of the pelvic structures for accurate diagnosis and safe operative procedures requires establishment of a sufficient pneumoperitoneum. It is not clear that pneumoperitoneum prior to trocar insertion is advantageous. In fact, there are complications unique to faulty Veress needle placement and pneumoperitoneum induction.

The purpose of this study is to determine whether direct trocar insertion at the time of laparoscopy is a

safe procedure and that the method eliminates needle insufflation and its related complications.

## Materials and Methods

Between July 1987 and June 1990 the author performed 538 laparoscopic procedures using direct trocar insertion technique as described by Copeland, et al.<sup>1</sup> The technique was modified, because in many cases, the objective of laparoscopy was achieved without insufflation altogether (Table 1). After the institution of general anesthesia, the patient was prepped and draped in the usual fashion in lithotomy and about 10° Trendelenburg position. A pelvic examination was performed with special attention to the position, size, shape, and mobility of the uterus. The cervix was exposed through a single-hinged vaginal speculum and a uterine sound tenaculum was inserted into the uterus. A 1 cm infraumbilical incision was then made. Using an open 4 × 4 sponge to provide a better grip, the abdomen was grasped midway between the umbilicus and symphysis. Alternatively, in the severely obese patient, the abdomen was grasped lateral to the midline by towel clips. While elevating the abdominal wall, the trocar was inserted at right angle to the skin and directed toward the true pelvis. Entry was accomplished using a twisting motion and controlled pressure until no further resistance was felt. Immediately upon entry the laparoscope, with the light on, was inserted to verify the intra-abdominal placement. With the positioning of the patient into a 5° to 10° more Trendelenburg and elevating the abdominal wall maximally, enough room air rushed

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Table 1. Direct Trocar Insertion. 538 Case Experience. July 1987-June 1990

Data	Diagnostic		Sterilization		Complications			
	Insufflated	Not Insufflated	Insufflated	Not Insufflated	Technical Failure	Wound Infection	Post-Operative Hosp.	Sterilization Failure
Obese	140	22	68	18	0	3	1	1
Non-Obese	115	51	22	102	0	1	2	0
Previous Surgery	92	6	20	16	0	2	0	1
Without Prev. Surg.	163	67	70	104	0	2	3	0
Parity {	0	7	28	5	0	0	1	0
	1	82	26	31	0	1	0	0
	2-7	166	19	77	0	3	2	1

into the pelvis that, coupled with mobilization of the uterine fundus via the uterine sound tenaculum, the completion of the procedure was facilitated. If diagnostic assessment was not feasible or fulguration of the fallopian tubes could not be performed safely, then a pneumoperitoneum was established.

Data collected for study included age, parity, height, weight, and history of previous abdominal surgery such as Cesarean section, exploratory laparotomy, hysterectomy, appendectomy, and/or laparoscopy. The recovery room nursing personnel were solicited to comment about and note patient postoperative discomfort and recovery period.

## Results

Patient characteristics were similar over the three years studied; obesity was encountered often (46%) because West Virginia was second after Wisconsin in having the highest rate of obese population in the United States. Obesity was defined as a weight more than 20% above the ideal body weight.<sup>2</sup> The average age of patients was 27 years. Ages ranged from 16 to 63 years, with 70% of patients between 20 and 30 years of age. Of the 538 laparoscopies using this technique, 210 were for sterilization; of those, 17% had a history of previous pelvic operation. Of the remaining 328 patients, of whom 30% had had previous surgery, diagnostic laparoscopy was performed for unexplained pelvic pain, suspected unruptured ectopic pregnancy, investigating infertility, and evaluation of fallopian tubes prior to contemplated reconstructive surgery.

In no case was there failure of trocar insertion. Except for four cases of minor self-limiting wound infection and a tubal pregnancy occurring 13 months post-tubal ligation, there were no complications. The interesting history of the latter case is briefly described:

Because of a positive serum pregnancy test, a severely obese 109-kilogram multiparous white woman underwent diagnostic laparoscopy on April 12, 1990, for suspected unruptured ectopic pregnancy. On admission to another institution two days earlier, ectopic pregnancy was not considered. Studies included hematologic parameter, urinalysis, chest X-ray, and KUB; all results were negative. The patient was treated medically and referred to the author for evaluation of her abdominal pain. One hour prior to laparoscopy, a pelvic ultrasonography indicated no intrauterine pregnancy. However, it demonstrated a large amount of fluid believed to be interperitoneal.

Proper entry using the direct trocar insertion technique was achieved with the first attempt. The patient's obesity was of concern only because it made grasping difficult, necessitating the use of towel clips to elevate the abdominal wall, a prerequisite for a safe and successful direct trocar entry. The ectopic pregnancy could not be confirmed because of a huge 19-pound, thin-wall parovarian cyst occupying the whole pelvis up to the diaphragm and covering the pelvic organs and abdominal viscus (Fig). At laparotomy, the right tube was blue, fusiform, and dilated to 3 cm at its mid-portion. Pathologic examination confirmed the diagnosis of unruptured tubal pregnancy and par-ovarian serous cystadenoma. The patient recovered uneventfully. Table 1 summarizes several important data.

## Discussion

In this study of 538 cases of laparoscopy using direct trocar insertion without prior pneumoperitoneum, the author supports the initial impression of Dingfelder<sup>3</sup> that the method is safe and can effectively eliminate the complications of needle-induced pneumoperitoneum. This study also substantiates





**Parovarian serous cystadenoma overlying pelvic organs and abdominal viscus prohibiting the confirmation of unruptured tubal pregnancy at laparoscopy.**

the fact that previous uneventful operative procedures such as Cesarean section, hysterectomy, laparoscopy, or appendectomy of an unruptured appendix, regardless of the type of abdominal incision, is not a contraindication to the method. However, in patients at high risk for subumbilical adhesions, an alternative route for entry or open laparoscopy technique need to be considered. Furthermore, this study disputes the dogma that a successful pneumoperitoneum before trocar entry is the first step in laparoscopy.<sup>4,5</sup> In fact, in the first laparoscopy performed in humans in 1910, Jacobaeus of Stockholm used no separate pneumoperitoneum needle, the

same method that eight years earlier Kelling of Germany had used on a living dog.<sup>6</sup> Jacobaeus introduced air by means of the trocar he used for the introduction of the cystoscope. Kelling, as well as Stone of Kansas, whose work was published in 1924,<sup>7</sup> failed to transfer their experience to humans, and they both eventually abandoned the technique.

Benedict of Boston was the first to report fatality from peritoneoscopy, which he attributed to the pneumoperitoneum.<sup>8</sup> Contemporary authors,<sup>9-15</sup> who contributed to repopularizing laparoscopy in the United States during the 1970s, place great emphasis on the need for the safe induction of pneumoperitoneum, citing it as the single factor responsible for the largest number of complications. Table 2 enumerates these complications, the last eight of which are specific to the Veress needle when the surgeon does not know where the tip of the needle is at the time of insufflation.

Abdominal distention secondary to insufflation makes elevation of the abdominal wall difficult. It diminishes the surgeon's ability to feel each layer during trocar insertion, consequently increasing the need of force to achieve trocar entry, a factor that may well be responsible for trocar-related injuries to the pelvic viscera and major abdominal vessels.

In only one of the four wound infection cases were towel clips used to elevate the abdominal wall. Towel clips were inevitably used in half a dozen thin athletic nulliparas and 67 severely obese patients. Towel clips may traumatize periumbilical vascular network and cause periumbilical hematoma. In no case in this series was there hematoma formation. There was no satisfactory explanation for this observation other than applying towel clips further away laterally from the umbilicus and leaving the incision partially open.

There are definite advantages to the direct trocar insertion technique. First, the visualization of the pelvis directly from the onset of the procedure decreases the actual anesthesia and operating time, shortens the postoperative recovery period, and significantly enhances patient safety. Second, the ability to visualize mobilization and elevation of the uterine fundus by uterine sound tenaculum from the onset of the procedure permits the exposure of the various pelvic organs and peritoneal spaces with less gas insufflation, avoiding overdistention, and thus minimizing cardiopulmonary compromise and dramatically decreasing patient postoperative discomfort.

In conclusion, the author believes that direct trocar insertion without prior pneumoperitoneum as

**Table 2. Needle-Induced Pneumoperitoneum Complications**

1. Blood vessel injuries
2. Bladder injuries
3. Occult injuries to bowel
4. Occult injuries to omentum
5. Subcutaneous emphysema
6. Retroperitoneal emphysema
7. Omental emphysema
8. Bowel distention
9. Gas embolism
10. Failed pneumoperitoneum results in failed laparoscopy
11. Over distention
12. Abdominal wall tension causing suboptimal control of the abdominal wall for trocar insertion

outlined by Dingfelder<sup>3</sup> and Copeland, et al, and modified here is a safe and effective method of laparoscopy. Since the surgeon relies on his surgical skill and concentrates on anatomical knowledge at the time of entry, the technique is secure and rewarding.



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## The Author

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## Symposium on Antimicrobial Therapy

# I. Principles of Antimicrobial Therapy

Ronald A. Greenfield, MD

**This is the first in a series of articles by Dr Greenfield on antimicrobial therapy.**

In 1980–1982, the pages of this journal were graced by “A Seminar on Antibiotics” by Everett R. Rhoades, MD. Much has changed since that series of articles, and I begin here to try to match his goal of providing a review of this topic. I refer the reader to his excellent concise review of the history of antimicrobial therapy.<sup>1</sup>

For a number of reasons, antimicrobial therapy is an important topic for most physicians and Pharmacy and Therapeutics Committee reviews. Antimicrobial agents are the second most commonly used class of drugs, second only to cardiovascular agents. It is estimated that in 1986, the value of pharmaceutical industry shipments (before markup, distribution, or administration costs) was 27 billion dollars; 12% to 15% of that, or 3 to 4 billion dollars, was for antimicrobial agents.<sup>2</sup> Perhaps antimicrobial agents are authoritatively used by a broader base of physicians than any other class of therapeutic agents. Approximately one-third of all hospitalized patients receive antimicrobial agents, and approximately one-third of hospital expenditures for drugs are for antimicrobial agents.<sup>2</sup>

Within 25 years of the beginning of the antimicro-

bial therapy era, it was recognized that these agents were widely overused and misused.<sup>3</sup> A quarter century later, concerns about the attractiveness of new antibiotics to physicians, exaggerated claims by sales representatives, and the enormous impact of promotion of new antibiotic agents to physicians are at least as valid. Numerous published studies have demonstrated that the wrong antimicrobial agent is selected, the wrong dose is used, or an inappropriate duration of antimicrobial therapy is selected *about half the time*.<sup>2</sup> This is *not* a good guys–bad guys situation. Dr Calvin Kunin taught me that antimicrobial misuse never results from physicians trying to do harm; it results from physicians trying too hard to do good. Although I value my youth too much to be a philosopher, I am quite concerned about how physicians learn about the continuing evolution of antimicrobial therapy. Newer antimicrobial agents are almost universally more expensive than older agents. Newer agents are promoted by multipage multicolored glossy advertisements in most medical journals and by a substantial sales force motivated by rewards based on the amounts of drugs prescribed by physicians in their territory. Although I claim no uncommon purity, I attempt here an even-handed review of older and newer antimicrobial agents.

Additionally, there is one unique aspect of antimicrobial therapy that I believe should be the dominant reason for physicians to be particularly aware of the appropriate use of these drugs. Whereas the impact of the choice of antihypertensive therapy, for example, is fairly well limited to an individual pa-

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tient, use of antimicrobial therapy in any given patient has an impact on the therapy of all subsequent patients. Although clearly that is somewhat exaggerated, in aggregate it is true. It is commonly believed that the most powerful force promoting development of resistance by bacteria to antimicrobial therapy is the use of antimicrobial therapy. Thus each antibiotic decision we make is of particular importance.

For the remainder of this introductory article, some general principles applicable to antimicrobial therapy will be discussed. The next article in this symposium will serve to introduce the  $\beta$ -lactam antimicrobials. Ensuing installments will detail specific classes of agents.

**A Conceptual Approach to Therapy.** There are five primary interventions a physician can exercise on the course of disease: observation, prophylaxis, empiric therapy, therapeutic trial, and specific therapy.<sup>4</sup> In the first instance, disease is present but is either not immediately threatening or no therapy is available. In the second instance, no disease is present, but there is a defined risk due to exposure to a limited range of pathogens for a limited period of time. Much of antimicrobial use is for prophylaxis, primarily prophylaxis for procedures. Prophylactic therapy is of demonstrated benefit under the conditions stated above; prophylaxis for all pathogens for all time is doomed to fail. The most important aspect of antimicrobial prophylaxis is timing. Tissue levels of antibiotics must be present when the procedure is begun and prophylaxis beyond 24 to 48 hours is not of demonstrated benefit. These concepts continue to be frequently violated.<sup>5</sup> Specifics of prophylactic uses of antimicrobial agents have been recently reviewed.<sup>6</sup>

The empiric use of antimicrobial therapy is the source of the most controversy. In this instance, infection is suspected but unproven, and it is decided that observation would place the patient at greater risk than presumptive therapy. Clearly there is a place for empiric treatment of infection, but there are great problems with "spiraling empiricism."<sup>4</sup> In the past 15 years, dozens of studies of empiric treatment for neutropenic hosts have appeared in the literature. This in part has led to development of thinking that all patients with possible bacterial infection require empiric treatment. Furthering the problem is the generally litigious environment in which we practice and the promotion of new broad-spectrum antimicrobial agents for use to "cover" all the possible diagnoses. This has been variously labelled as use of

"drugs of fear" (CM Kunin) and "decerebrate antibiotics" (LS Young) therapy. Empiric therapy can never substitute for accurate diagnosis. All the possibilities can never be covered. Recently nine *fallacies* associated with empiric antibiotic therapy were published: (1) broader is better, (2) failure to respond is failure to cover, (3) when in doubt, change drugs, or add another, (4) more disease(s), more drugs, (5) sickness requires immediate treatment, (6) response implies diagnosis, (7) bigger disease, bigger drugs, (8) bigger disease, newer drugs, and (9) antibiotics are nontoxic.<sup>4</sup>

A central principle of the treatment of infectious diseases involves the pursuit of a definitive diagnosis and the use of specific therapy. It is very difficult for me to answer the frequently asked question of how to modify therapy or how long to continue therapy for a patient without a diagnosis. A window of opportunity

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***If the correct thought processes  
have been exercised,  
many forms of empiric therapy  
are appropriate for 48 hours  
while diagnostic information  
is accrued.***

---

exists when a patient presents with an infection, and the diagnostic studies that will eventually yield a diagnosis must be performed in that window before empiric therapy is begun. Which studies should be performed in which circumstance is a course in infectious diseases and is clearly beyond the scope of this manuscript. The dominant thinking, however, should be that all studies necessary to include and exclude items in differential diagnosis should be sent before empiric therapy is begun. The complications of empiric therapy are drug toxicities, other complications of therapy (including access device-related complications), colonization with resistant bacteria and fungi, confounding of appropriate diagnosis and treatment, and wasted resources.<sup>7</sup>

Criteria for the institution of antimicrobial therapy for a febrile patient have been presented: (1) profound neutropenia or asplenia, and/or (2) hemodynamic instability unexplained by noninfectious processes, and/or (3) demonstration of a clinically significant bacterial infection necessitating the use of systemic antibiotic therapy.<sup>7</sup> In the latter regard, the

use of Gram-stained smears of clinical specimens to establish presumptive diagnoses within minutes cannot be overemphasized. Choices of empirical antimicrobial therapy should be based on knowledge of pathogens causing certain infectious processes at certain sites and knowledge of the local sensitivity patterns of infectious agents. I have little tolerance for discussion of the best empiric therapy. If the correct thought processes have been exercised, many forms of empiric therapy are appropriate for 48 hours while diagnostic information is accrued.

The fourth form of intervention is the therapeutic trial, similar to empiric therapy but more refined in scope. This involves specific narrowly directed treatment for a specified duration. The fifth intervention, specific therapy, should be considered the goal for treatment of infectious diseases (or all therapeutic interventions, for that matter). Empiric therapy or therapeutic trials should be terminated as soon as possible in favor of specific therapy. This may require a change in therapy or simply a conceptual change. Specific therapy should be the narrowest spectrum, most effective, least toxic, and least expensive alternative.

#### **Bacteriostatic or Bactericidal Therapy.**

Bacteriostatic therapy is therapy which inhibits bacterial growth, enabling host defense systems to eliminate the microbial invaders. Bactericidal therapy provides for killing of the invading bacteria. Actions of individual drugs on various bacteria may be either bacteriostatic or bactericidal. It is intuitively appealing to think that bactericidal therapy is always to be preferred, but in fact, there are a limited number of circumstances wherein it is established that bactericidal therapy is required. These are infective endocarditis, bacterial meningitis, bacterial infections in neutropenic hosts, and possibly osteomyelitis and septic arthritis. It follows directly that these are the only circumstances wherein direct measurement of bactericidal effect in serum is sensible. Measurement of "peak" and "trough" serum killing powers (sometimes known as Schlichter test) should demonstrate bactericidal activity at a 1:8 dilution at peak in these circumstances, as a general rule, to predict effective antibacterial therapy.<sup>8</sup>

**Single Drug or Combination Therapy.** Although it is intuitively apparent that single antimicrobial drug therapy would be simpler, frequently combinations of antimicrobial agents are administered, for one of several reasons.<sup>9</sup> A first of these is to prevent the emergence of resistant organisms. This is, of course, exemplified by antituberculous therapy.

There are data, discussed later in this symposium, indicating that this is a major reason for the improved efficacy of  $\beta$ -lactam and aminoglycoside combinations for treatment of *Pseudomonas aeruginosa* infections. A second reason for combination therapy is the polymicrobial nature of many infections, such as those resulting from disruption of the integrity of the gastrointestinal tract. Reduction of toxicity is a potential reason for combination therapy, although, to my knowledge, this is not definitively achievable with antimicrobial therapy, with the exception of the use of triple sulfonamides (and there is very little indication for this) to achieve additive antibacterial efficacy and minimize the risk of crystalluria (which is not additive). The final reason, and the one most nearly approaching mysticism, is for the attainment of antibacterial synergy. Briefly, this is the concept that the combined effect of two drugs is greater than the sum of their independent activities, ie,  $1 + 1 > 2$ . There is overwhelming literature on in vitro synergy, and very little information to substantiate the clinical relevancy of any of it. I routinely avoid discussions of in vitro synergy and recommend others do so as well. The best known relevant example of synergistic antimicrobial therapy is in the treatment of enterococcal infections: penicillins alone are bacteriostatic; aminoglycosides alone are inactive; the combination is synergistically bactericidal. Treatment of infections due to tolerant staphylococci (relatively readily inhibited but resistant to bactericidal effects of cell wall-active antibiotics unless combined with an aminoglycoside or rifampin) and treatment of *P. aeruginosa* infections ( $\beta$ -lactam antibiotic plus an aminoglycoside) are additional likely relevant examples.

**Bases of Comparison of Antimicrobial Agents.** Since we are about to make many comparisons among antimicrobial agents, we need to first define how we might do this. Potentially useful antimicrobial agents are evaluated first for their in vitro antimicrobial activity, and the first reports of new agents generally contain such data. This is most commonly presented as the minimum concentration of drug required to inhibit specific bacteria, the minimum inhibitory concentration (MIC), and often expressed as the concentration required to inhibit a certain percentage of strains of a given species (eg, MIC<sub>90</sub> refers to the minimum concentration of drug required to inhibit 90% of strains tested). Thus antimicrobial agents can be compared on the basis of their MIC, and data for such a comparison are abundant. Such information will be reviewed in this symposium.



sium, and detailed presentations of this data will be cited as references. However, the MIC in itself tells little of the potential usefulness of an antimicrobial agent. One must also have knowledge of achievable concentrations of that drug in serum, and more important still, at the sites of infection. Thus knowledge of some pharmacokinetic properties of the agent is required. A number of important properties of antimicrobial drugs are included here: volume of distribution, protein binding, tissue penetration, metabolism, and excretion are some of the more obvious. These determine much of the potential usefulness of an antimicrobial agent.<sup>10</sup> We will discuss the pharmacokinetics of individual agents and make comparisons between agents on principles of pharmacokinetics when this is clinically pertinent in this

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***New antibiotics are often first tested in uncontrolled studies, then usually tested in comparison to established agents.***

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symposium, but full details of pharmacokinetics will generally not be presented. In addition to pharmacokinetics, we will briefly discuss some aspects of pharmacodynamics, the study of the interactions between pharmacokinetic properties of the drug and properties of microorganisms that determine therapeutic efficacy. This is a rather new and exciting area of antimicrobial therapy research. The postantibiotic effect (suppression of bacterial growth after exposure to an antibiotic) and postantibiotic leukocyte enhancement of bacterial killing are relevant and interesting examples of pharmacodynamic effects.<sup>11</sup> Some principles of pharmacodynamics will be mentioned in this symposium.

Information on the therapeutic efficacy of antimicrobial agents in animal models of infection is often available. Some information on comparison of antimicrobial agents is also acquired in animal models, and some of this is very useful, if appropriate pharmacodynamics are modeled in the animals.<sup>12,13</sup> Such data will be used in comparisons to be made herein.

Obviously, what we really would like are comparative clinical trials. Surprisingly perhaps, these

are rather scant. New antibiotics are often first tested in uncontrolled studies, then usually tested in comparison to established agents. These studies are designed (by establishment of inclusion and exclusion criteria) with a bias toward demonstrating that the new antimicrobial agent is effective. Perhaps somewhat cynically, I have stated that the answer is always 92% efficacy (go ahead, test this hypothesis). Usually the new agent is established as "as effective as" the older agent. Patient populations are typically too small to detect what may well be clinically significant differences in efficacy or toxicity. There are, unfortunately, very few significant comparative clinical trials to mention in this symposium.

Another basis of comparison is toxicity. A fair bit is known about the toxicity of an antimicrobial agent before release and marketing, but clearly more is learned in the first years after general release. This is one reason that an old adage is applicable to the use of antimicrobial agents: neither be first nor last. Again there is relatively little direct clinical comparison of antimicrobial toxicity, so much of this information must be inferred from different study populations, at times a very difficult task.

A final basis for comparison of antimicrobial agents is cost. This is, of course, only relevant when comparing equally effective and toxic therapies, and there is the problem. It is often difficult to define the terms of the comparison. Be wary of this in marketing discussions. The costs of antimicrobial therapy vary considerably and change quickly, but general guidelines on cost issues are presented in this symposium.

**Methods for Improvement in the Use of Antimicrobial Agents.** This is a subject of considerable recent interest. In general, I continue to believe that the best methods for improving the use of antimicrobial agents are educational, not legislative. This is the major motivation for this symposium. The Infectious Diseases Society of America has published a "white paper" on this matter,<sup>14</sup> which I support. The paper in essence provides guidelines for establishment and operation of an interdisciplinary Antimicrobial Agents Team. "The primary responsibility of the team is to help physicians use antimicrobial agents optimally in patient care." Other effective approaches have been employed, including mandatory use of structured antibiotic order forms,<sup>15</sup> computer-assisted antibiotic monitoring,<sup>16</sup> and prospective review by an infectious diseases service.<sup>17</sup> I fear that if we, as the community of physicians, do not gain control of appropriate use of antimicrobial agents, it will be mandated by external forces. □



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# Antimicrobial Susceptibility Report for Oklahoma City Institutions—1991

D.J. Flournoy, PhD; Steve Johnson, MT(ASCP); David Welch, PhD

Antimicrobial susceptibilities among 10 Oklahoma City institutions, including over 33,000 common bacterial isolates, were compared. Results show a slight increase in methicillin resistance for *Staphylococcus aureus* since 1990, for several institutions. In addition, from 47% to 81% of all coagulase-negative staphylococci were resistant to methicillin. However, vancomycin was active against over 98% of the 14,415 isolates of enterococci and staphylococci. Among the Gram negative bacilli, there was great diversity in susceptibilities among institutions for piperacillin (*Escherichia coli* and *Klebsiella pneumoniae*), ciprofloxacin, and gentamicin (*Pseudomonas aeruginosa*).

Antimicrobial susceptibility results vary among institutions,<sup>1,2</sup> presumably because of differences in antibiotic usage, patient populations, and institutional policies. We recently noted striking differences in oxacillin resistance among *Staphylococcus aureus* from three hospitals and a private laboratory in Oklahoma City.<sup>2</sup> The purpose of this report is to update, expand, and allow comparison of antimicrobial susceptibility data from all major institutions in Oklahoma City.

## Materials and Methods

Table 1 lists antimicrobial susceptibility testing methods among the participating institutions. For those methods/institutions where blood and urine susceptibilities were reported, only the blood susceptibility

Table 1. Antimicrobial Susceptibility Testing Methods by Institution

Institution	Method
A	Microscan Walkaway
B	Disc agar diffusion
C	Microscan Autoscan IV/in-house broth microdilution
D	Microscan Autoscan IV/in-house broth microdilution
E	Vitek IMS (GNR), disc agar diffusion (GPC)
F	Microscan Walkaway
G	Vitek IMS
H	Microscan Walkaway
I	Microscan Touchscan
J	Vitek IMS

GNR (Gram negative rods), GPC (Gram Positive cocci), IMS (information management system).

Microscan® (Baxter Diagnostics Inc., Deerfield, IL), Vitek IMS (Vitek Systems, Hazelwood, MO).

data were included in this report. Institutions were designated by letters of the alphabet. Institution A is a private laboratory servicing over 140 nursing homes in Oklahoma, B serves primarily adult males, D serves children up to 21 years old, and G serves patients of all ages but with a heavy geriatric population. All other institutions serve patients of all ages and both genders. Institutions B, C, and D were teaching hospitals in the University of Oklahoma Health Sciences Center. All the major hospitals in Oklahoma City were included in this report. The study period was from January 1 to December 31, 1991.

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Table 2. Antimicrobial Susceptibility Results of Selected Gram Negative Bacilli

Bacteria	Institution	Number	Percent Susceptible						
			AN	AM	CR	CIP	GM	PIP	SXT
<i>Escherichia coli</i>	A	1385	99	65	86	99	96	71	86
	B	509	99	63	43	99	97	72	82
	C	940	99	65	92	100	97	68	91
	D	580	99	55	92	100	97	57	83
	E	693	100	69	90	99	99	85	92
	F	610	99	74	91	100	98	80	94
	G	998	100	66	97	99	99	76	93
	H	905	99	71	98	100	98	76	92
	I	1370	100	70	93	100	98	83	92
	J	558	100	68	96	99	99	78	94
<i>Klebsiella pneumoniae</i>	A	465	100	21	90	95	94	83	84
	B	306	99	2	77	90	90	75	74
	C	292	100	3	91	98	96	53	92
	D	145	100	3	97	100	97	54	91
	E	255	100	11	90	100	97	98	95
	F	152	99	26	93	98	96	84	91
	G	353	99	5	98	98	99	96	97
	H	354	100	17	97	98	95	89	93
	I	516	99	29	92	97	97	91	93
	J	193	100	7	99	100	99	90	93
<i>Proteus mirabilis</i>	A	646	95	90	91	98	94	93	93
	B	183	97	87	86	98	95	99	84
	C	114	97	89	91	96	86	92	89
	D	65	97	91	92	100	86	88	88
	E	112	100	95	97	100	96	98	99
	F	121	95	86	89	97	86	93	89
	G	156	100	90	94	99	98	98	96
	H	156	97	92	97	100	95	97	96
	I	613	99	92	98	100	97	96	92
	J	100	100	95	95	100	95	96	91
<i>Pseudomonas aeruginosa</i>	A	814	80	—	1	60	48	95	29
	B	540	93	—	—	80	82	90	—
	C	330	88	—	—	82	63	92	—
	D	355	83	—	—	95	67	88	—
	E	317	94	3	1	92	83	99	31
	F	213	93	—	0	00	77	98	31
	G	421	97	—	—	85	92	96	—
	H	702	90	—	—	89	77	98	—
	I	994	94	—	0	70	70	92	—
	J	238	98	—	—	91	87	94	—

Number (number of isolates tested)

Abbreviations: AN (amikacin), AM (ampicillin), CR (cephalothin), CIP (ciprofloxacin), GM (gentamicin), PIP (piperacillin), SXT (sulfamethoxazole-trimethoprim)

Institutional modifications: G, H, and J (used cefazolin instead of cephalothin), E (reported *Klebsiella* sp. instead of *K. pneumoniae*; and used "first-generation" cephalosporins other than cephalothin)

Although it is considered proper to report methicillin-resistant *Staphylococcus aureus* (MRSA) as resistant to cephalothin regardless of its in vitro susceptibility, some institutions adjust their antimicrobial susceptibility reports in order to reflect their policies on appropriate therapy. An example would be to report MRSA as resistant to chloramphenicol, clindamycin, and tetracycline even though the isolates test susceptible. However, for the purpose of

this report, raw unadjusted data were used unless otherwise noted. Even though the term MRSA is used commonly, in vitro antimicrobial testing is performed with oxacillin since it is more stable. Both methicillin and oxacillin are members of the penicillinase-resistant penicillin class of antimicrobials.

## Results

Antimicrobial susceptibilities for Gram negative ba-



Table 3. Antimicrobial Susceptibility Results of Selected Gram Positive Cocci

Bacteria	Institution	Number	Percent Susceptible										
			AM	CR	CC	CIP	ER	GM	OX	P	SXT	TE	VA <sup>e</sup>
<i>Enterococcus faecalis</i>	A	459	98	—	—	43	16	—	—	98	—	32	98
	B	423	93	—	—	—	38	—	—	—	—	32	99
	C	303	96	—	—	—	15	—	—	94	—	—	100
	D	189	97	—	—	—	15	—	—	95	—	—	99
	E	330	100	—	—	79	—	—	—	75	—	—	100
	F	241	97	—	—	81	15	—	—	96	—	27	98
	G	220	92	—	—	—	—	—	—	92	—	—	100
	H	556	99	—	—	83	21	—	—	99	—	24	100
	I	—	—	—	—	—	—	—	—	—	—	—	—
	J	254	94	—	—	100	—	—	—	90	—	33	100
<i>Staphylococcus aureus</i>	A	721	5	32	33	31	12	71	31	5	89	88	99
	B	669	—	92 <sup>b</sup>	54	20	48	68	54	5	70	88	99
	C	638	—	80	79	—	—	87	80	2	—	—	100
	D	554	—	89	89	—	—	92	89	2	—	—	100
	E	360	6	87 <sup>d</sup>	85	—	78	92	87	6	93	—	100
	F	312	7	71 <sup>d</sup>	71	71	46	81	71	7	88	89	99
	G	735	—	—	97 <sup>c</sup>	72	90 <sup>e</sup>	—	69	0	96	83	100
	H	1103	9	82 <sup>d</sup>	81	83	65	95	82	9	96	93	100
	I	1279	5	57 <sup>b</sup>	58	56	45	82	58	—	90	92	100
	J	379	—	90 <sup>d</sup>	90	91	65	—	90	8	95	94	100
<i>Staphylococcus sp.<sup>a</sup></i>	A	402	4	19	84	55	24	62	19	4	62	51	98
	B	737	—	91 <sup>b</sup>	60	78	40	56	41	13	43	66	100
	C	316	—	51	64	—	40	73	49	9	—	—	99
	D	307	—	43	58	—	33	61	40	5	—	—	100
	E	669	11	48 <sup>d</sup>	71	—	49	79	47	11	54	—	100
	F	203	14	34 <sup>d</sup>	72	71	34	67	34	15	65	62	99
	G	95	19	—	78	70	48	—	52	19	59	63	100
	H	573	14	40 <sup>d</sup>	65	69	41	68	41	14	71	66	100
	I	1146	11	41 <sup>b</sup>	73	65	38	72	41	—	74	60	100
	J	257	—	53 <sup>d</sup>	74	82	43	—	53	12	70	65	100

Number (number of isolates tested)  
Abbreviations: AM (ampicillin), CR (cephalothin), CC (clindamycin), CIP (ciprofloxacin), E (erythromycin), GM (gentamicin), OX (oxacillin), SXT (sulfamethoxazole-trimethoprim) and VA (vancomycin)  
Institutional modifications: G (used cefazolin instead of cephalothin), E (used "first-generation" cephalosporins instead of cephalothin), A, F (*S. epidermidis* for *Staphylococcus sp.*).  
a - coagulase negative staphylococci  
b - cephalothin was only reported for those *S. aureus* isolates susceptible to oxacillin  
c - oxacillin susceptible *S. aureus* only  
d - cephalothin reported as resistant for MRSA  
e - Vancomycin resistance was not confirmed by repeat testing and could occur due to spurious tests or reporting errors.

cilli are noted in Table 2 and Gram positive cocci in Table 3. Susceptibilities among the Gram negative bacilli varied greatly among the institutions. *E. coli*, from Institution B, were notably more resistant to cephalothin than *E. coli* from other institutions. Piperacillin was more resistant to *E. coli* at Institution D than at the other institutions. For *K. pneumoniae*, cephalothin and sulfamethoxazole-trimethoprim were least active at Institution B, while piperacillin was least active at institutions C and D. Ciprofloxacin and gentamicin were least active against *P. aeruginosa* from Institution A. When antimicrobial susceptibility percentages were summarized for Gram negative bacilli (Table 4), the greatest amount of resistance was seen in isolates from Institution B, followed numerically by D, A, C, F, I, H, J, G, and E.

For enterococci, greatest resistance to ciprofloxacin was among isolates from Institution A. Oxacillin resistance in *S. aureus* was greatest from Institution A, followed by B and I. In general, coagulase-negative staphylococci were more resistant than *S. aureus* to all antimicrobials reported, except penicillin and perhaps ciprofloxacin. Fortunately, enterococci and staphylococci were highly susceptible to vancomycin.

## Discussion

There have been few citywide published antimicrobial susceptibility reports from Oklahoma City. In 1987, a survey-based report noted penicillin resistance in *Streptococcus pneumoniae* in 139 Oklahoma City residents for 1984.<sup>3</sup> In 1979 and 1991, we re-

Table 4. Comparison of Antimicrobial Resistance Among Gram Negative Bacilli

Institution	Sum of Percentages from Table 1 <sup>a</sup>				
	<i>E. coli</i>	<i>K. pneumoniae</i>	<i>P. mirabilis</i>	<i>P. aeruginosa</i>	All
A	602	567	654	283	2106
B	555	507	646	345	2053
C	612	533	640	325	2110
D	583	542	642	333	2100
E	634	591	685	368	2278
F	636	587	635	358	2216
G	630	592	675	370	2267
H	634	589	674	354	2251
I	636	598	674	326	2234
J	634	588	672	370	2264

a - The sums represent a total of all % susceptibilities for all antimicrobials combined (eg, institution A, *E. coli*: AN (92), AM (65), CR (86), CIP (99), GM (96), PIP (71) and SXT (86) equal 602. The greater the number, the greater the degree of susceptibility.

ported on common clinical isolates in four Oklahoma City institutions.<sup>2</sup> However, this is the first antimicrobial susceptibility report for common clinical isolates from all major health care institutions in Oklahoma City.

The percent of *Klebsiella pneumoniae* that were susceptible to ampicillin appeared to be dependent on the method of testing (Table 2), with highest percentages seen where the Microscan Walkaway and Touchscan instruments were in use. In general, *K. pneumoniae* isolates from Institution B were more resistant than those from other institutions. Isolates from this institution have been reported to be more resistant than those from a large referral hospital in Saudi Arabia.<sup>4</sup> However, institutions C and D have isolates that are more resistant to piperacillin. In addition, institutions C and D have the most resistant *E. coli* versus piperacillin. *Pseudomonas aeruginosa* isolates from institution A were more resistant than those from other institutions. There was a wide range of susceptibilities to gentamicin among institutions. Among all Gram negative bacilli from all the institutions, those from Institution B had the greatest resistance to cephalothin.

Antimicrobial testing policies were much more diverse for the Gram positive cocci than the Gram negative bacilli. These policies were undoubtedly influenced by institutional, professional, and consultant policies and opinions. It is interesting and fortunate that vancomycin was active against almost all isolates of *E. faecalis*, *S. aureus*, and *Staphylococcus* sp.

The percentage of *S. aureus* isolates that were resistant to oxacillin varied from 10% to 69% among all institutions, increasing in the four institutions that were surveyed in 1990.<sup>2</sup> The percentages noted

in Tables 2 and 3 compare to those that other investigators found. In 1990, the prevalence of MRSA was reported to be 15% in teaching institutions, 22% in critical care units,<sup>5</sup> and 20% to 40% at large tertiary referral and veterans hospitals, but only 2% to 10% at affiliated hospitals.<sup>6</sup> Interestingly, there was no significant detection of interhospital spread of MRSA in university-affiliated hospitals despite the sharing of resident physicians, interns, and medical students.<sup>6</sup> This is also in agreement with what we found, since institu-

tions B, C, and D are all in the University of Oklahoma Health Sciences Center Complex, yet B clearly had the greatest amount of MRSA.

In summary, there is a good likelihood that methicillin resistance will continue to increase in Oklahoma City in the near future. Problems could arise if vancomycin-resistant Gram positive cocci increase. Variations in antimicrobial susceptibilities (ie, cephalosporins, ciprofloxacin, piperacillin) among Gram negative bacilli from the ten institutions suggest that factors such as patient population and institutional policies may influence the occurrence of resistance appreciably. If so, a comparison of institutional policies might be used as a tool for decreasing resistance among organisms in some institutions. □

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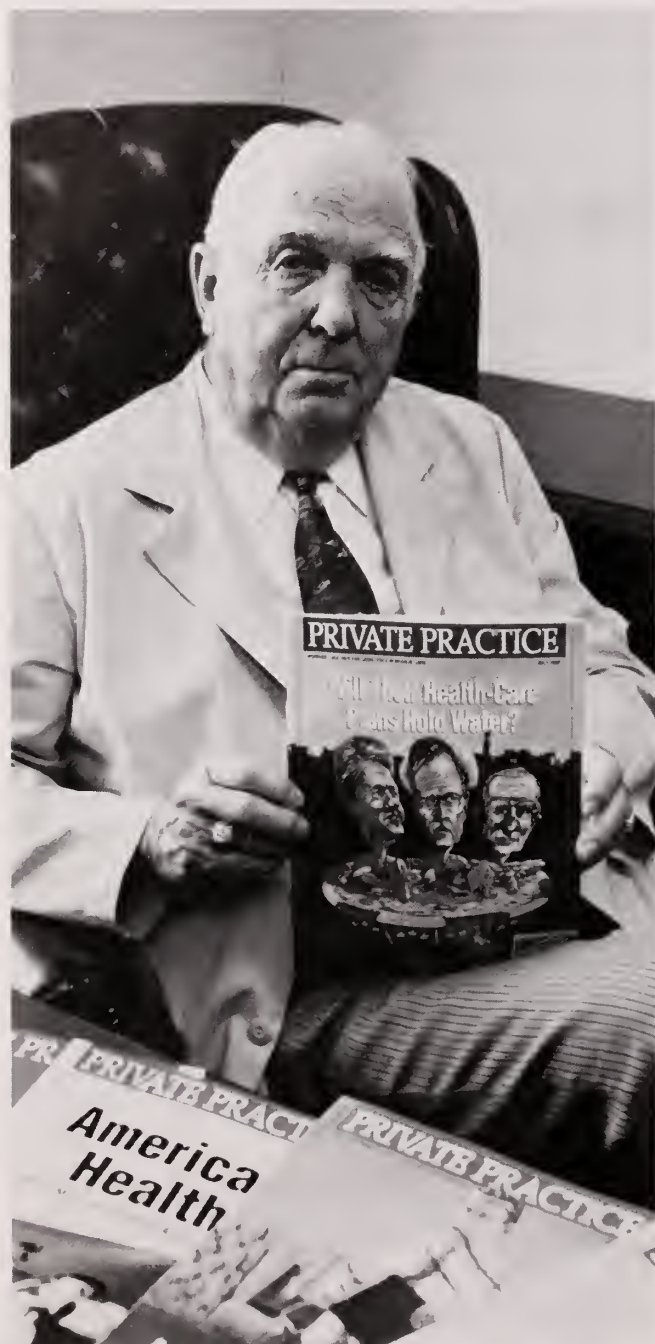
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*His 30-year mission, to get the government out of medicine, continues in earnest. The main vehicle in his crusade is his magazine Private Practice.*

## Leaders in Medicine: Francis A. Davis, MD

**A**t mid-morning on Monday, it's quiet on the fifth floor of the bank building in downtown Shawnee. At least compared to what it was like 40 years ago when Francis Davis opened his general practice office at the end of the hall and patients were streaming in and out. Often, he'd see 50 or 60 of them in his office pretty much on a first-come, first-served basis. No appointments were made or accepted. He just opened the door and in they'd troop.

Some days, he'd see 100 or more; you can imagine the commotion. Not that anyone ever had to wait very long, Davis says. He had "a way of moving along" while keeping his patients satisfied; at least, very few complained to him and only one even thought (fleetingly) about suing him.

But on this Monday morning in June, the doctor, now 74, sits behind his desk reading and taking notes and an occasional phone call—most are long dis-



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**Story by Richard Green**  
**Photographs by Victor R. Rivas**

tance. His stethoscope, hanging from a hat rack, is more an ornament, or perhaps symbol, than a useful instrument, since he quit seeing patients three years ago.

He quit, not because he wanted to retire, but because Congress enacted a law in 1987 that forbade doctors from charging their Medicare patients for laboratory services provided by the doctor or the doctor's employees. Initially, Davis had continued to bill his patients for lab tests, which he said were reliable and reasonably priced. But when he started getting threatening letters from the government—to refund the money or be fined up to \$2,000 per instance—he knew it was time to get out.

Though his practice was over, his 30-year mission, to get the government out of medicine, continues in earnest. The main vehicle in his crusade is his magazine *Private Practice*. The June issue has just been delivered to his office and to 170,000 others nationwide.

He scarcely notices. He read those articles and composed his own column for it a few months back. His attention is directed at copy for the August and September issues. The phone rings. "Lilly, if that's for me, I'll take it," Davis shouts into the outer office.

No wonder. He's hoping that someone will spring for some very big bucks—five million of them—to finance his plan to begin to turn things around. Davis has always believed that if he and others persist in getting the message across, that the only way to improve the quality of and access to medical care is to eliminate the government's role, the public will eventually catch on and demand reform.

So back in 1977, Davis masterminded a coordinated informational campaign that took place in thirty-six US cities over a couple of weeks. Teams of speakers made presentations in both private and public forums. While Davis concedes that the effort didn't reverse the trend toward socialized medicine, he says the new recruits that sprang from those seminars sure helped to slow it down. And now he thinks that national health legislation is not only not inevitable but not even likely. "There's not enough money," he says.

So if the momentum has stalled, the time may be ripe for a counteroffensive, and Davis is thinking big: three-day informational blitzkriegs produced by teams of speakers in 100 major American cities choreographed over three weeks. The plans were made over a year ago when Davis was contacted by several Congressmen, including Phil Crain of Illinois and Mickey Edwards of Oklahoma, who was Davis's first editor of *Private Practice*.

"I believe our campaign could have an enormous impact across the country," says Davis. "But we need five million (dollars). I don't know, if I get tired of waiting, I might sell my bank (First State Bank in Shawnee) and finance it myself."

And for the first time in more than an hour, Francis Davis smiles just for an instant. Then he says, "Nah, I don't have that kind of money. But I have friends who do."

\* \* \*

**R**eaders of *Private Practice* might assume that Francis Davis is an angry man, or an unhappy one. Since 1969, he's been hammering away editorially at the federal government with provocative titles such as "Let's Get Medicine Out of the Mudhole," "It's Time to Stand Up and Say No," and "Will Fear Destroy the Private Practice of Medicine?"

Davis is unhappy about the profession's loss of freedom since he began practicing in Shawnee in 1951—and he speaks about it with traces of frustration and exasperation. But his determination and equilibrium remain rock solid. Brian Sherman, editor of *Private Practice*, says he has never even seen his boss of eight years get irritated, let alone angry. "I mean, he might get mad occasionally, but how would you know? He doesn't show emotion; I've never heard him raise his voice."

Davis has an economy of emotion and speech. Whether answering questions about his upbringing or discussing his mission, "the defense and promotion

## Saving Our Medical System

By Francis A. Davis, MD

We did not reach our current health-care crisis by accident. It is obvious that problems arise when patients are relieved of the responsibility of paying for their own medical care and health insurance.

The Kerr-Mills bill, passed in 1962, was supposed to solve all our medical problems, as were the Medicare and Medicaid programs, created in 1965. In both cases, the result was more government involvement and, hence, more problems.

It will be difficult to sell the American people on any health-care program that excludes the

government, but there is no other way for us to clean up the mess we have created.

Here are my recommendations for presidential candidates who are serious about solving our health care problems:

1. Establish a 100-percent tax deduction for the cost of medical insurance purchased by individuals.

2. Phase out tax deductions for medical insurance purchased by employers and other third parties.

3. Permit taxpayers to contribute up to \$5,000 a year to medical individual retirement accounts.

4. Make medical costs exceeding insurance premiums and medical IRA contributions 100-percent tax deductible.

of the private sector of medicine," he speaks laconically. He answers questions about his private life reticently. Exploring a topic requires asking lots of questions. Rarely does he elaborate or volunteer information. Conversational lulls don't bother him.

He is a chip off the old block. Though his father, Roy H. Davis, never got beyond the eighth grade and spent his life working on oil rigs, those are mere details. Fundamentally, father and son have proven to be much alike in intelligence, personality, and values. The basic difference between them was one of opportunity. Davis says if he had been able to get a decent job following high school in 1936, he probably wouldn't have attended college.

Roy and Bonnie Davis produced three children. Francis, born in 1920, has an older brother, R.H., and a younger sister, Ardah. Their family life was uncomplicated; Bonnie ran the home while Roy worked, and everybody knew what was expected of them. Their parents were their role models.

"Little things didn't bother Dad," Davis says. "He never laid a hand on any of us. When we disobeyed him, which was rare, he'd just say he was disappointed and that was enough."

The seeds for Dr Davis's later political opposition to government medicine probably were sown in the 1930s when the labor unions moved into the south-central Kansas oilfields around Winfield and told his father when he could work and when he couldn't.

That struck Roy Davis as wrong, and he ex-

plained why in the same straightforward way that Francis uses to explain why the government should stay out of medicine. If an honorable man agrees to do a job, he seals it with a handshake, and it's just between him and the other person.

When Francis was 7, his father almost died, and that was a turning point in the boy's life. "My father was critically ill with pneumonia and spent about eight weeks in the Winfield hospital."

In that pre-antibiotic era, the treatment, called "lysis and crisis," consisted of removing a two-inch section of rib and inserting a tube into the chest to drain the abscess. It was fifty-fifty in the sense that the patient either improved or died. To have even attempted such a procedure indicated that Drs Jones and H.L. Synder were more sophisticated than most rural GPs in Kansas.

Even before Roy Davis was discharged from the hospital, Francis had decided he would become a physician. And though only 7, he says his intention never wavered. He enrolled at Southwestern in Winfield, laid out a year to work fulltime to save money, and matriculated to Oklahoma A&M, where he graduated with a chemistry degree in 1941. He was admitted to the medical schools in Oklahoma and Kansas in 1941 but didn't have the funds to begin.

If he could have scraped by for a couple of months, until after December 7th of that year, the US government would have begun paying his way through medical school. But Davis had no idea that the US



5. Require individuals who take the 100-percent tax deduction for medical expenses to carry at least \$50,000 in medical insurance.

6. Require individuals to pay for their first \$1,000 in annual medical expenses and for 15 percent of expenses thereafter, but permit them to pay these out-of-pocket expenses with medical IRA funds.

7. Make patients responsible for paying all medical expenses, including those for prescription drugs, hospital services, physician fees and nursing homes. Permit insurance agents, doctors, hospitals and pharmacists to help patients fill out insurance forms, but make patients ultimately responsible for submitting these forms.

8. Prohibit insurance companies from can-

celing policies because of a person's age or any other reason except failure to pay premiums.

9. Phase out all federal and state health-care programs and let local governments and charities such as civic clubs, churches, chambers of commerce and others help those in actual need. This was the answer to this health-care problem for two centuries; it can work again.

10. Make the Food and Drug Administration responsible only for determining the safety of a drug. Doctors and research-based pharmaceutical companies should be responsible for deciding whether a drug is effective.

11. Require the losers in malpractice suits to pay all legal and court costs for both parties.

—Private Practice, April 1992

was about to enter World War II. So, he quit his long-time job at C.R. Anthony's department store and went to work for Army Ordnance at Hope, Ark.

Davis worked with twenty other young college graduates, and they became extraordinarily close in a setting where their job—testing field artillery—was important to the war effort and where they had a common foe, one Colonel Adams. A West Pointer, Adams would not permit the men, who were civilians, to obtain commissions as Army officers because he didn't think they had earned them. If they complained too loudly or too much, Adams could and

school at either OU or Southwestern in Dallas. "You could talk to him to a point," Davis says, "but we didn't see eye to eye. It was nothing personal."

Still, his three years at Hope were enjoyable, and Davis has returned there for reunions many times since. Three of his compatriots also became physicians, and they've stayed in touch. He met his first wife, Jonnie, in Hope. They got married in the summer of 1944 and had two children, Francis Jr., called Bud, and Elizabeth Ann, called Sissy. Jonnie raised their children much as Francis's mother had raised him and his siblings. And, like his own father, Francis always had the respect and love of his children, didn't use corporal punishment, and never let trivial matters bother him. However, by 1971, with the children grown, the marital problems that had developed over the years came into sharper focus and Francis and Jonnie split up. She died from cancer in 1979. In 1986, he married a Texan, Margaret Davis, now a prominent realtor in Shawnee.

As 1944 was running out, Davis finally was commissioned as a lieutenant, junior grade, in the Navy. Assigned to amphibious duty as a gunnery officer, Davis shipped out of Saipan in early August of the following year bound for the invasion of Japan. Shortly thereafter, a B-29 left a nearby atoll named Tinian, also bound for Japan, specifically for Hiroshima. The bomber, the *Enola Gay*, reached its destination first, dropped the atomic bomb, and three days later World War II ended.

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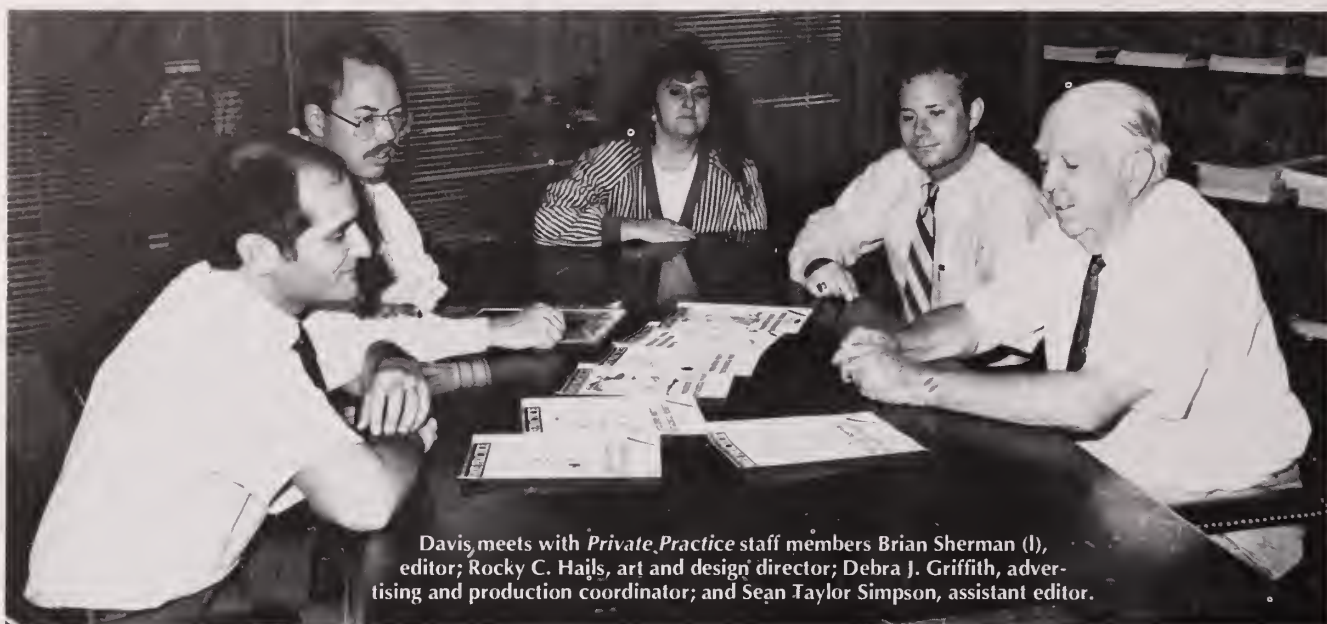
***"It was a different ball game then," Davis says, using his refrain for comparing the practice of medicine then with now.***

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would simply fire them and let their draft boards know of their availability.

That was why Davis stayed put, even after Colonel Adams had refused his request to enter medical





Davis meets with *Private Practice* staff members Brian Sherman (l), editor; Rocky C. Hails, art and design director; Debra J. Griffith, advertising and production coordinator; and Sean Taylor Simpson, assistant editor.

Two months later, as part of the US occupation forces, Davis was in Hiroshima, seeing for himself that the description of the city's utter destruction had not been exaggerated. By March, he was "rarin' to get home." He missed Jonnie and hadn't even seen their son, Bud, who was almost a year old.

Davis also was anxious about getting into medical school. Supposedly, there were twenty applicants for every position. He preferred OU, but since he was technically a Kansas resident, OU turned him down. However, the KU admissions committee said, in effect, since he had been admissible in 1941, he still was in 1946.

Davis expected that the five-year hiatus from school would make things tough, but his basic science years were even more demanding than he could have imagined. "I had no idea what I was getting into, and I sweated alot."

Though he was 27 and a Navy veteran, he was still intimidated by the professors, who gave new meaning to the words *disciplinarian* and *authoritarian*. "No foolishness, no cutting classes, or they'd kick you out," Davis says. "Mistakes weren't tolerated very well; they kept saying, 'If you make mistakes as doctors, your patient winds up dead.'"

Though Davis did admire some of his clinical professors, he was very glad to be graduating in 1950. He and three classmates took their internship at the US Naval Hospital at Camp Pendleton, Calif, because the pay was comparatively out of sight: \$400 a month.

"When we arrived in June, there were five of us and 300 patients in the hospital," Davis says. "In August, the Korean War began, and by the fall we had 1,500 patients. I admitted 15 myself one night after midnight. For a time, the scheduling was not human. We started at 8 AM and got off at 5 PM the next day; twenty-four hours later we were back on for another shift."

The Navy asked Davis to stick around for another year, but he said no thanks. Actually, if he had had the funds, he might have entered an ophthalmology or surgery residency program. But with a family to support, he felt some urgency to start a practice. He drove his family to relatives in Oklahoma because flooding prevented them from reaching his Kansas relatives. Davis visited a couple of towns that needed a doctor and, on the recommendation of his aunt in Wewoka, visited the Baxter brothers, who were looking for a doctor to practice with them in Shawnee.

Feeling the need to get going, Davis paid them a visit, and about ten days after he'd left California, he was setting up with the Baxter brothers in Shawnee.

\* \* \*

Shawnee's population in 1951 was about the same as it is today, but there were only half as many doctors, twenty-five versus fifty. Furthermore, only a couple were board certified and, as Davis soon realized, only a handful had really active practices; the Baxter brothers were not among them. This led to

problems within a month or two because Davis was seeing more patients than the brothers combined. "They were just not eager to work and I was," Davis says. "So, we split up and I bought the practice of Dr Leon Combs, who was going into the service."

Davis moved into Combs's office on the fifth floor of the bank building at the corner of Main and Bell, and he's been there ever since. Also, he never again even considered having a partner. "I was busy from day one," he says.

Soon, he couldn't even imagine doing anything else. Davis never had time to muse anyway. Most days he was at the hospital by 6:45 AM and, if he had surgery to do, was in the OR by 7:15. Since he liked surgery and had a facility for it, he made sure he got lots of experience during his internship. In his practice, he did thyroids, mastectomies, some orthopedics, abdominals, and C-sections.

He saw patients in his office and their homes. He says he made 300 house calls in one incredible month. "But it was a different ball game then," he says, using his refrain for comparing the practice of medicine then with now. "Many more patients today are neurotic and have stress-related illnesses. When I started practice, most people worked out their own problems; we had no tranquilizers to offer. Completely different ball game."

Lunch and supper at home were virtually the only little holes in Davis's long workdays. After supper, he returned to the hospital for evening rounds or to cover the ER or deliver a baby. He delivered hundreds in the 1950s and enjoyed helping to bring new life into the world and happiness into peoples' lives. But it was very time-consuming, and by the early 1960s he decided he had to cut back this part of his practice in order to confront what he believed to be a national emergency.

\* \* \*

**F**rom his vantage point in 1962, Francis Davis could see into the future, and his apocalyptic vision for the medical profession was based on the sudden spread of the storm clouds that formed in 1945 when President Harry Truman began advocating national health insurance. Though Congress didn't support the plan, national lawmakers did pass the Kerr-Mills Bill in 1960. It provided for a modest amount of federal aid to state medical programs serving the poor.

While the act was a compromise between factions



"It's impossible to know the truth and not be held responsible."

advocating national health insurance and factions wanting little or no government interference in medicine, many within the American Medical Association thought the Kerr-Mills Bill had been a victory. After all, the doctrine of states' rights was preserved, government interference seemed negligible, and there was PR value in supporting aid for genuine indigents.

Francis Davis had a different interpretation. He saw Kerr-Mills not as a victory, but as the first step toward the enslavement of the profession. Compro-



mise, any compromise, would inevitably lead to more concessions and the gradual erosion of the freedom that he believes is essential to the physician-patient relationship.

He saw this very clearly by 1962, and whether or not he was aware of Cicero's remarks then, he quoted them in a *Private Practice* editorial thirty years later: "It's impossible to know the truth and not be held responsible."

His career during those thirty years has embodied that belief. Since he opposed any government interference in the practice of medicine, he couldn't rationalize billing the government for a patient's care, and so he never did.

However, simply carrying out his own beliefs wasn't enough by 1962. "I just felt deeply that I needed to do something to wake up physicians and the public."

He had allies in Shawnee, among them a veterinarian named Bob Barker. "He had been our family doctor, but we became friends, in part because we

local educational (some would say political) activities had no effect on my practice. My patients came to me for good care, not to hear my political views."

Actually, Davis says, the few negative remarks paled in comparison with the long-term value of the seminars. Barker says, "We sowed the seeds that became a conservative power base in the county."

And, the technique of community saturation by well-prepared, articulate proponents of conservative viewpoints succeeded so well that Davis used the same blueprint for action on a much larger scale in another critical year, 1977, when national health insurance seemed close to reality.

\* \* \*

**M**eanwhile, the assassination of President Kennedy led to the presidency of Lyndon Johnson and the passage of Medicare and Medicaid in 1965. As a delegate to the American Medical Association, Davis was part of a conservative group that convened a special meeting of the House of Delegates. "We didn't think that the AMA was doing enough to oppose the Medicare and Medicaid bills, so the House of Delegates passed a series of resolutions. One of them instructed the AMA to advise physicians not to participate in those programs."

But the AMA hierarchy, Davis says, passed over the resolution, probably fearing a lawsuit over restraint of trade. "We didn't believe that, but the AMA compromised," Davis notes sarcastically, "in exchange for the government's promise that nothing in the legislation would ever allow the government to interfere with the private practice of medicine."

It was a dark period for Francis Davis when those bills were enacted because he knew that medicine's problems would escalate. But instead of getting down, "we just decided we were gonna have to work harder and do more."

Davis had played a pivotal role in founding a national organization, the Congress of County Medical Societies, which would take strong conservative stands but speak through the AMA. For example, this organization had called for the special session of the AMA House of Delegates. Still, Davis realized that "to influence doctors locally, we would need other means to communicate our ideas. So we went to several medical journals to ask if they would run socioeconomic articles that we would provide."

The answers ranged from a polite "no," (we like your ideas and wish you well but can't afford to get involved) to "HELL, NO."

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***"There's lots more people  
today without medical care  
than before  
Medicare and Medicaid."***

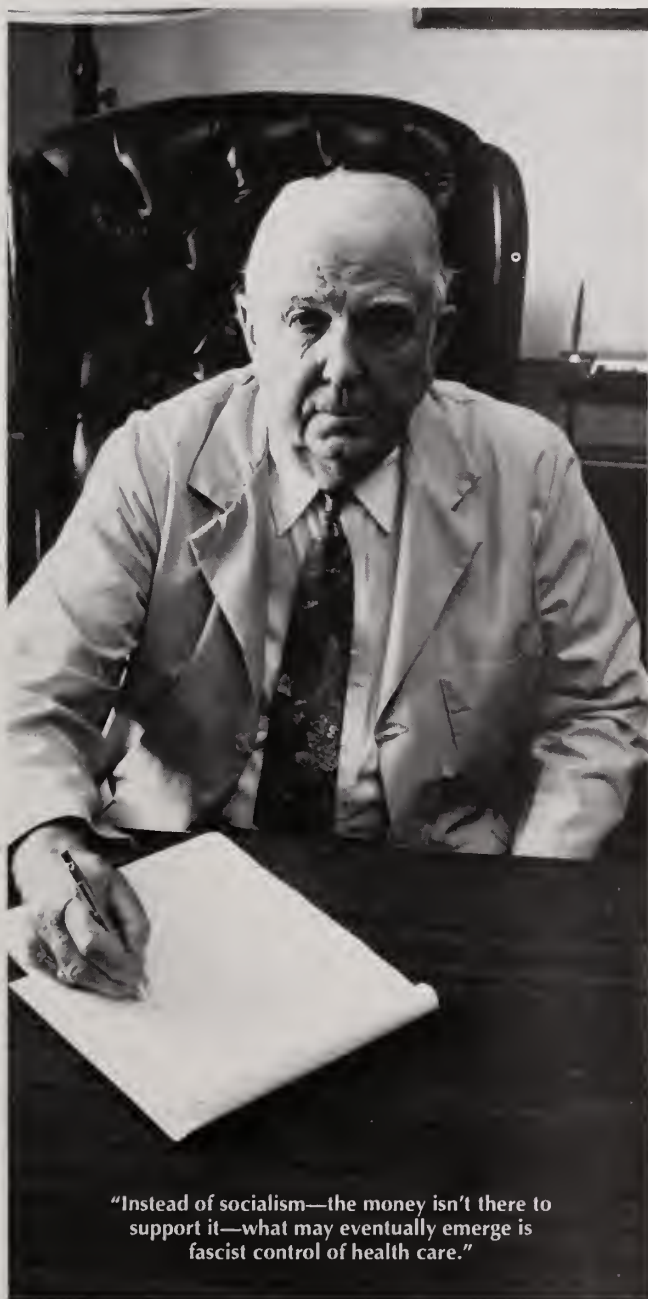
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shared political interests," Barker says. "We became apostles, so to speak, of Leonard Read, who ran the Foundation for Economic Education (a conservative think tank) in New York. He preached that we are all Isaiahs (the first great Hebrew prophet) working for a bloodless, non-military revolution."

Under Davis's leadership and financial support, a group in Pottawatomie County founded the Freedom Forum, which consisted of a series of politically conservative guest speakers that would spend about three days making presentations in various venues, including schools, civic clubs, the county medical society, and so on. The guests were a conservative's Who's Who of the time: Walter Judd, Fulton Lewis Jr., M. Stanton Evans, Strom Thurmond, and a man who was in the midst of changing careers, Ronald Reagan.

The public reaction to the Freedom Forum, Davis says, was very favorable, but by no means unanimous. "I was called a John Bircher and worse, but my





"Instead of socialism—the money isn't there to support it—what may eventually emerge is fascist control of health care."

Disappointed but not discouraged, the group decided to develop their own communications vehicle. "Just to keep up the momentum and because I was hardheaded," Davis says, "I volunteered to lead the effort."

What emerged was the monthly journal *Private Practice*, with Francis Davis as publisher and principal owner. The first issue was February 1969 and its editor was a former *Daily Oklahoman* editorial writer

named Mickey Edwards, now Oklahoma's Fifth District Congressman.

Then, as now, the journal is distributed free of charge to the MDs on the mailing list. "Physicians get umpteen journals for free, and if we charged a subscription fee, we would have lost most of our readers right away," Davis says. "Ads keep us going."

Virtually all of the ads are from the pharmaceutical industry, which knows a friend when it sees one. Davis had vigorously opposed the Kefauver bill of the early 1960s, which extended the federal Food and Drug Administration's responsibility for establishing drug safety to efficacy as well. To Davis, that extension of power was more government infringement and would slow down to a crawl the drug licensing process.

Now, all these years later, he says he was right. "I once saw the documentation for one drug, and it consisted of three stacks of materials that reached from floor to ceiling and the drug, with years of testing, still hadn't been approved or thrown out."

Though he may feel vindicated from time to time, how does he feel about the fact that the government has become much more intrusive in medicine than when he began his mission thirty years ago? And what about the idea that while some physicians consider him to be great and others a nut, the great majority probably don't consider him at all?

"I'm not stupid," he says. "I am aware that physicians have busy practices and that the great majority—maybe 99%—have the attitude that they can't do anything about government medicine."

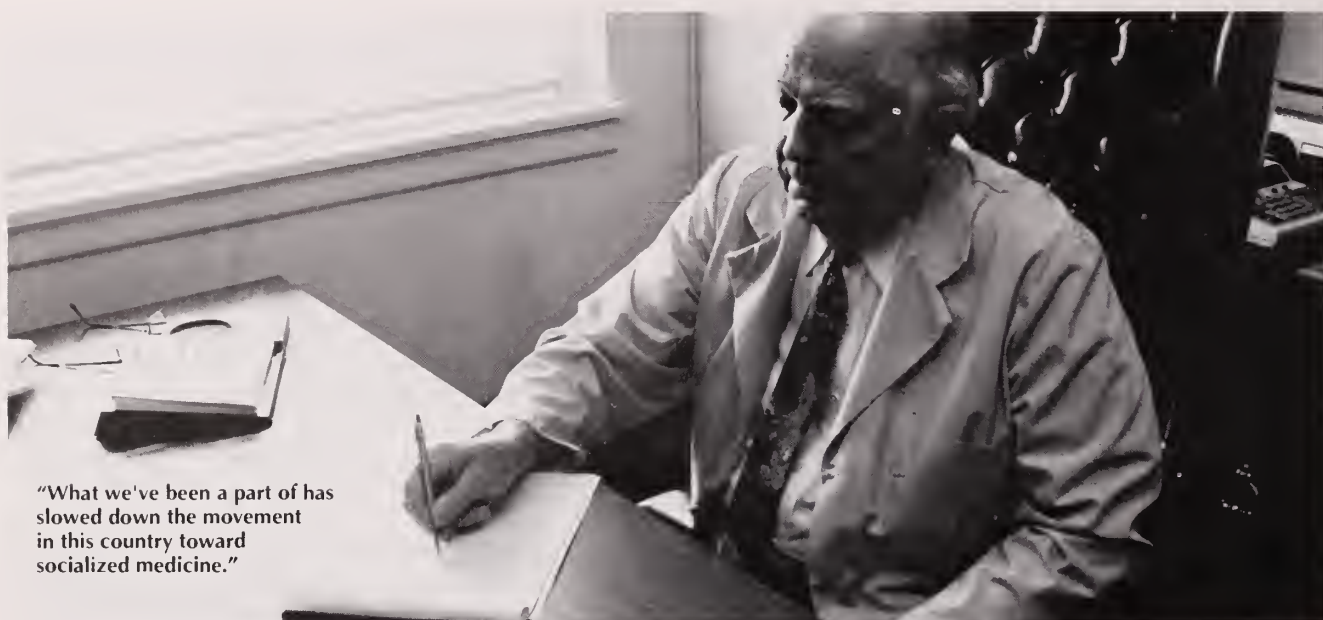
"I get disappointed, sure, but you never get depressed. All we can do is what we've always done: keep getting factual information before physicians. I know there is growing discontent among physicians today. More and more are quitting. I don't know how many times I've heard, just recently, 'If I had the money, I'd get out now.'"

\* \* \*

**E**ven after reciting a long litany of government sins against the medical profession, Davis says medicine is still a comparatively good profession. "Government regulation pervades almost all professional areas. Only the clergy have the opportunity to help people the way doctors still do."

(For the record, his children are not physicians, but Francis Jr. is an Oklahoma City dentist and Elizabeth Ann is a veterinary student.)

Though Davis sees little chance for change away



"What we've been a part of has slowed down the movement in this country toward socialized medicine."

from government medicine in the short run, he mentions the growing numbers of disaffected among the profession and the public. "You know, there's lots more people today without medical care than before Medicare and Medicaid.

"What we've been a part of has slowed down the movement in this country toward socialized medicine. Remember, it seemed inevitable to many in 1975 under Jimmy Carter. Our freedom in medicine seminars in 1977 were very successful in helping to curb the momentum. Now, here we are again, at a point where many say that national health insurance is a virtual certainty. But it won't happen."

Davis believes that the government "will keep whittling away at our freedoms. But instead of socialism—the money isn't there to support it—what may eventually emerge is fascist control of health care."

A very gloomy prediction, indeed. And yet, Davis says he will never, never give up hope, though he's never been accused of wearing rose-colored glasses. In the April 1992 issue of his journal, he wrote a column called "Saving Our Medical System" [p 486].

There wasn't much reaction, he says. But, he

adds, if one takes those same recommendations and, using the 1977 game plan and organization, presents them across America in a concentrated time period, a groundswell of support would result. The question, he says, is one of magnitude, but the potential is awesome.

What a coalition it would be, this grass roots movement, he says. Old doctors with their memories of how things used to be and younger doctors with their vision of how things ought to be.

Davis isn't holding his breath. And yet, if the \$5 million to finance his massive one-hundred-city undertaking is going to materialize, he sure hopes it will be soon. Though he's remarkably healthy for a man of 74, he wants to be in good shape so he can go along for the ride. ¶

*Begun in 1981, the Leaders in Medicine series recognizes some of Oklahoma's most outstanding physicians and the contributions they have made to their communities and profession. This is the twenty-second article in the series.*

*Richard Green is a freelance writer in Oklahoma City. He has been writing Leaders in Medicine biographies since 1985.*

*Victor Rivas is a freelance photographer, formerly of Oklahoma City.*

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# **The Hospital Medical Staff Section Twentieth Assembly Meeting December 3 - 7, 1992 Opryland Hotel Nashville, Tennessee**

**Highlights of the Interim Meeting will include  
an educational program on:**

**Part I:  
A Futurist's Picture of  
Health Care 2000**

A highly recognized consultant in health care issues will provide his perspective of the factors that will influence the reform of the health care system in the decades to come. Having painted a picture of Health Care 2000, the futurist will respond to questions of a reactor panel which will focus on:

- the role of organized medicine in framing the future health care delivery system,
- the role physicians will play in shaping the future and assuring adequate access to high quality health care services, and
- the impact that anticipated changes in the health care delivery system will have on the hospital medical staff's relationship with the community outside the hospital setting, including the payers.

**Part II:  
Physician / Hospital  
Organizational Models  
for the Future**

The relation of the hospital with members of its medical staff will be substantially impacted by the forces that are shaping national health care policy and the health care delivery system of the future. The HMSS Representatives will learn:

- what some states are doing to serve as "laboratories" for alternative health care delivery systems,
- what the AMA is doing to study and advise physicians on the appropriateness of various physician / hospital organizations, and
- what one consultant anticipates will ultimately be the prognosis for organizational relationships between health care providers.

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Hospital Medical Staff Services  
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## Coleman reports on Legal Update from AMA-HMSS legal counsel

The Health Care Advisory Board, a Washington, DC, organization that represents hospitals throughout the country, has issued a 250-page document entitled "Competitive Strategy: 10+ Long-Term Strategic Positions for Hospitals." The document describes strategies for hospitals to "guarantee future revenue stream (and) improve margins in times of intense competition." The document identifies gaining control of physicians as the "top priority" survival strategy. The best way to control physicians, according to the document, is to employ them. As employers, hospitals can limit utilization, ensure referrals, and gain de facto control over payers. The Advisory Board concludes that although this strategy poses a significant risk of offending physicians, the issue for hospitals is whether the long-term potential warrants the risk: Advisory Board answer: a resounding "Yes."

The document also concludes that having physicians as partners is an excellent strategy for long-term survival, though not as desirable as employing physicians. As for a third strategy, selling hospitals to physicians, the Advisory Board concludes: "hospitals not in dire financial straits may find abdicating 100% of control to physicians too extreme a measure to stomach."

• A previous Legal Update discussed the issue of physician credentialing and peer review of nonphysician members of the medical staff. As noted, the medical staff is primarily responsible for the quality of care rendered by individuals with clinical privileges, but physicians technically are not the "peers" of nonphysicians. Also, because the Health Care Quality Improvement Act of 1986 does not apply to peer review of nonphysicians, physicians who credential nonphysicians may be subject to liability for lawsuits arising out of the peer review. For that reason, one attorney recommends that hospitals agree in writing to indemnify the medical staff for claims that arise out of peer review of nonphysicians. Anti-trust issues surrounding physician review of

nonphysicians were addressed at the June meeting of the AMA Hospital Medical Staff Section.

• A recent Vermont health system reform bill marks a significant achievement in the issue of physician negotiations regarding payment. This bill creates a Health Care Authority that will develop a Health Care Spending Budget for the state, starting in 1994. Health care bargaining groups approved by the authority may negotiate with it over the budget and any other matter related to reimbursements. The bill allows physicians to form bargaining groups. Any contracts negotiated must be approved by the authority, however. Interestingly, the bill does not authorize hospitals to form bargaining groups.

—William O. Coleman, MD  
Chairman, OSMA-HMSS

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### *Life Members named*

## OSMA Board of Trustees holds summer meeting in Okla. City

The August 19 meeting of the Oklahoma State Medical Association's Board of Trustees was held at association headquarters in Oklahoma City.

In a special presentation, Dr Edward N. Brandt, former dean of the University of Oklahoma College of Medicine, received a Presidential Citation from OSMA President James D. Funnell, MD. Dr Funnell thanked Dr Brandt for his support of the OSMA and his leadership of the College of Medicine.

A number of reports were submitted for information, and the following actions were taken by the board:

• Jay A. Gregory, MD, Muskogee surgeon and chairman of the OSMA board, was nominated to serve on the Advisory Committee to the Office of

*(continued)*

## AMA surveys attitudes of physicians and the public about health care

*Earlier this year, the American Medical Association released results of two telephone surveys on health care issues. Because the survey results are both relevant and interesting, the complete text of the "Physician and Public Opinion on Health Care Issues—1992" executive summary is reprinted here.*

### Executive Summary: Physician Opinion

To measure physician opinion on several key issues facing health care and medicine, the American Medical Association (AMA) commissioned The Gallup Organization to conduct telephone interviews with a random sample of physicians in the United States. Gallup's office in Lincoln, Nebraska, completed 1,003 interviews between January 24 and February 28, 1992. Margin of error for items asked of all 1,003 physician respondents is plus or minus 3.1% at the 95% confidence level.

✓ A plurality of US physicians (38%) think cost is the main problem facing health care and medicine in the United States today, while one-fourth (24%) believe the main problem is access to care.

✓ Substantial numbers of physicians think changes within the next five years are very likely with regard to substantial restrictions on fees for physician services (69%); expansion of the Medicaid program to cover everyone below the poverty level (30%); and a government-financed national health insurance (24%).

✓ Almost half (46%) prefer an approach to health care reform that would require individuals to pur-

chase their own insurance rather than an employer-based approach (34%) or a government-based approach (18%).

✓ A majority (55%) think reform of the medical liability system would be a very effective means of controlling health care costs; a plurality (45%) think spending more on preventive health measures would be very effective; lower effectiveness ratings (in descending order combining "very effective" and "somewhat effective") are given to requiring patients to spend more out of pocket, directly controlling prices, setting more stringent limits on what insurance will cover, setting a limit on total federal government health care spending, and requiring physicians to post fees for common procedures and services.

✓ Over three-fourths (79%) are unable to name a specific health care reform proposal; when told the names of three proposals, from forty-one percent to fifty-one percent say they have heard of each.

✓ Three-fourths believe organized medicine can definitely (34%) or probably (41%) have a significant impact on the type of health care reform that takes place in the United States.

✓ A plurality (42%) think the American Medical Association can best represent the profession's views and interests in the health care reform debate; one-fifth (22%) believe national medical specialty societies can best fulfill that role.

✓ Four out of five US physicians (81%) think medical societies should try to implement reforms through a combination of government and private programs, rather than trying to implement a government-financed national health insurance program (14%) or resisting any significant change in the health care system (3%).

✓ Medicare beneficiaries constitute one-third (33%) of the average physician's patient load.

✓ Two out of five physicians who treat Medicare patients (42%) consider themselves very familiar with changes associated with RBRVS implementation.

✓ Of physicians who treat Medicare patients, the following proportions were helped "a lot" or "some" in their preparation for RBRVS implementation by national medical specialty societies (58%), state and local medical societies (44%), and the AMA (41%).

✓ Three-fourths of physicians with Medicare patients (74%) expect to treat about the same number of Medicare beneficiaries under RBRVS as they did

### OSMA trustees meet (continued)

Quality Assurance at the American Medical Association.

• OSMA Executive Director David Bickham reported that PLICO would like to raise the compensation level for its board members from \$50 to \$75 per hour for time spent at PLICO board meetings and was asking for the OSMA board's approval. It was noted that this is a PLICO expense, not a OSMA expense. The item was tabled until the next board meeting on November 22, at which time costs and comparative figures will be presented.

• OSMA Life Memberships were approved for Bruce H. Brown, MD, McAlester; Kenneth Peacher, MD, El Reno; and Jodie Stark, MD, and Adolph Vammen, MD, Tulsa.

□

*(continued)*



## OSMA Board of Trustees and guests meet on August 16 in Okla. City



**Billy Dale Dotter, MD,** reports on his work with the Governor's Commission on Health Care Reform.



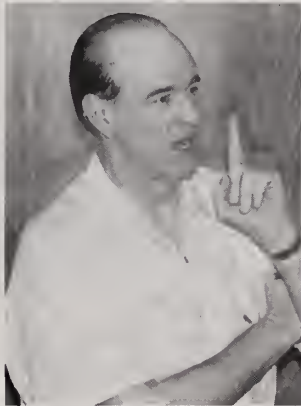
**John A. McIntyre, MD,** chairman of the PLICO board, outlines the continued affordability of PLICO professional liability coverage.



**OSMA President James D. Funnell, MD (l),** presents a Presidential Citation to Dr Edward N. Brandt of OUHSC for his outstanding service and accomplishments as dean of the OU College of Medicine.



**Mary Anne McCaffree, MD,** vice chair, consults her handbook for the next item on the agenda.



**Perry A. Lambird, MD,** describes the position of the American Medical Association on PROs.



**Thomas L. Whitsett, MD,** reports on the OSMA's efforts to work with the DHS on new Drug Utilization Review regulations.



**John Bumpas, MD, Bethany,** explains the DHS's plans to bring Medicaid funding up to Medicare levels.



**Chairman Jay A. Gregory, MD,** Oklahoma City, presides over the meeting.



**Kern Jackson, MD, McAlester,** represents southeast Oklahoma physicians on the OSMA board.



**Jon Axton, MD,** immediate past president of OCMS, listens attentively.



**OFPR Executive Director Jim Williams** discusses his agency's activities.

## Political action committee chooses candidates for August primaries



Meeting in Oklahoma City August 9, the Oklahoma Medical Political Action Committee (OMPAC) decides which candidates to support in Oklahoma's primary elections.

After the primaries, the committee repeats the selection process for the general election.

Among those attending were (left) Judy Critchfield, president, OSMA; Lyle R. Kelsay, associate director, OSMA; Sherry Strebel, immediate past president, AMAA; Richard J. Boatsman, MD, Lawton; Chester i. Bynum, MD, Norman; and James W. McDoniel, MD, Chickasha.

Also participating: (l to r) Eldon V. Gibson, MD, Shawnee; Burdge F. Green, MD, Stilwell; C.S. Lewis, Jr., MD, Tulsa; and Douglas C. Hubner, MD, Tulsa.



## AMA survey results *(continued)*

before its implementation; thirteen percent expect to treat fewer, and eight percent expect to treat more.

✓ Four out of five physicians (82%) think the medical profession should have an agent to negotiate with the government regarding physicians' fees; two out of five of those supporting the idea (40%) think the AMA should serve as that negotiating agent, and one-fifth (21%) think national medical specialty societies should do so.

✓ Pre-admission review (22%), profiling of individual physicians' treatment patterns (22%), and retrospective review (19%) are each seen by about one-fifth of physicians as the most burdensome medical review requirement. Medical necessity review (11%) and concurrent review (7%) are seen as most burdensome by fewer US physicians.

✓ Two-thirds of US physicians (66%) are not reluctant to participate in hospital peer review, while three in ten are somewhat (23%) or very (6%) reluctant to do so.

✓ Physicians who are reluctant to participate in

hospital peer review are most likely to cite time (30%) as the main reason for their reluctance; for one in six (16%) discomfort with judging other physicians is the main reason for being reluctant, while fourteen percent cite liability concerns.

✓ Two-thirds of physicians (68%) say they would be more likely to use practice guidelines developed by physician organizations, rather than by academic researchers (19%), utilization review organizations (5%), government entities (1%) or insurance companies (1%).

✓ One-third (33%) say they often use practice guidelines in their clinical practice, while one-fourth (27%) use them occasionally, sixteen percent rarely, and fifteen percent never.

✓ Four out of five physicians (81%) think the medical profession should have a mechanism to enforce a uniform code of ethics; of those physicians, about one-third (32%) think the hospital medical staff, and the same proportion (32%) think the state medical society, is the level at which committees could most effectively investigate complaints of unethical conduct and recommend disciplinary mea-



## AMA survey results *(continued)*

tures; one-fourth (26%) think the county medical society would be most effective.

✓ Half of US physicians (50%) do not think the AMA should serve as the ultimate arbiter or appellate body to resolve disputes regarding compliance with the Code of ethics; slightly fewer (46%) think the AMA should play that role.

✓ Seven in ten physicians (71%) think the medical profession should be empowered to resolve complaints about excessive physician fees.

✓ Eighty-four percent of US physicians think the threat of malpractice suits causes them to do tests they otherwise might consider unnecessary; of those physicians, three-fifths (61%) believe doing additional tests on the basis of malpractice concerns adds significantly to the cost of care they provide.

✓ Half of physicians (51%) think the system of compensation for injuries resulting from medical care should be a no-fault system, while forty percent think the system should be based on fault.

✓ Three-fifths (60%) of physicians would support voluntary infection control audits of physician offices, leading to certification of offices where infection control is effective.

✓ A majority (59%) believe that all patient-care physicians should be vaccinated against hepatitis B; almost all who disagree (92%) say that hepatitis B vaccination is unnecessary for some patient-care physicians, rather than unnecessary for all of them (6%).

✓ Almost nine out of ten physicians (87%) believe that a physician who is HIV-positive is obligated to either obtain the patient's informed consent or refrain from performing significant invasive procedures.

✓ Eight out of ten physicians (82%) have knowingly treated at least one HIV-positive patient; about the same proportion (81%) believe a physician has the right to know if a patient is HIV-positive before treating him or her.

✓ Half of physicians (50%) think that all hospitalized patients should be HIV tested; thirty-five percent think that all physicians in clinical practice should be tested.

✓ Over three-fourths of all physicians (79%) say they review all medications with their patients before prescribing, while twelve percent say they do not; of those who do, a majority (56%) say they do so always,

## IN MEMORIAM

### 1991

John Berry Gilbert, MD	August 6
Frank Leo Bradley, MD	August 31
Rugie Reginald Coates, MD	September 15
James Byron Snow, MD	September 28
Howard Angus, MD	October 9
Jack Owen Alexander, MD	October 21
Roy Oliver Kelly, Jr., MD	October 22
Lowell Francis Thornton, MD	October 22
Lillian Marie Hoke, MD	October 25
Irwin Hubert Brown, MD	October 27
Harold Houston Jones, Jr., MD	October 27
Francis Ray First, Jr., MD	October 28
Robert W. Kahn, MD	October 30
Charles Hugh Wilson, MD	October 30
George Kellogg Stephens, MD	November 4
Edward M. Farris, MD	November 22
Weldon Keiller Haynie, MD	November 25
Samuel Richard Fryer, MD	November 30
William Thomas Snoddy, MD	December 3
Philip George Joseph, MD	December 20
Charles Patrick Kirkland, MD	December 24

### 1992

John Moore Campbell III, MD	January 24
Bruce Ratliff Hinson, MD	January 24
Louis Carroll Taylor, MD	February 3
Earl Russell Muntz, MD	February 4
Claude Marion Bloss, Jr., MD	February 24
Oliver James Hagg, MD	March 31
Francis Patrick Cawley, MD	April 17
Don Horatio O'Donoghue, MD	April 20
Billie Gene Henley, MD	April 24
Arlo Kenneth Cox, MD	April 27
Charles Victor Williams II, MD	May 1
Benjamin Joe Myers, MD	May 13
Robert Victor Bolene, MD	May 18
William Anders Crockett, MD	May 30
Charles Jackson Young, MD	May 31
Robert R. Dugan, MD	June 18
Ransom Francis Ringrose, MD	June 18
John L. Plewes, MD	June 21
David Lloyd Edwards, Sr., MD	June 23
Harlan Thomas, MD	June 30
Mark Donald Vanderslice, MD	July 13
William Branch Renfrow, MD	July 21
Jack Allen Harder, MD	August 19

*(continued)*



## AMA survey results *(continued)*

and forty-two percent say they usually do such reviews.

✓ Medicaid beneficiaries constitute eighteen percent of the average physician's patient load.

✓ Four out of five physicians (80%) are unaware that all state Medicaid prescription drug programs will have both prospective and retrospective drug utilization reviews by January 1, 1993.

✓ Less than half of physicians say they are willing to become involved in Medicaid drug utilization review programs by reviewing proposed criteria for judging appropriate use (46%) or by assisting with intervention programs for physicians with inappropriate prescribing patterns (42%).

### Executive Summary: Public Opinion

To measure public opinion on several key issues facing health care and medicine, the American Medical Association (AMA) commissioned The Gallup Organization to conduct telephone interviews with a random sample of US adults. Gallup's office in Lincoln, Nebraska, completed 1,514 interviews between

January 23 and February 17, 1992. Margin of error for items asked of all 1,514 respondents is plus or minus 2.5% at the 95% confidence level.

✓ An increasing majority (72%) of American adults think cost is the main problem facing health care and medicine in the United States today.

✓ One-fourth (26%) think poor people are able to get needed medical care, and one-third (34%) believe the elderly can get medical care they need.

✓ Almost half (48%) express a preference for a government-financed approach rather than employer-based (28%) or individual-requirement (21%) approach to health insurance coverage, but a majority (52%) say they would rather pay more out of their pockets to private providers than pay higher taxes and have the government be in charge of health care.

✓ Ninety-eight percent are unable to name a specific health care reform proposal; when told the names of three proposals, from fourteen percent to twenty-seven percent say they have heard of each.

✓ Stable majorities say they would rather pay more for health care in order to be able to select a personal physician (78%), get care right away (78%), select a particular hospital (73%), and have the latest

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## AMA survey results *(continued)*

medical technology locally available (57%), rather than pay less and have less choice/convenience.

✓ Of the 1,332 survey respondents (88%) who said they were covered by a health insurance plan, 73% said they had a plan through an employer and 25% said they were covered through a government plan, such as Medicare or Medicaid.

✓ One out of five (21%) individuals who have insurance coverage have had problems filling out insurance forms or dealing with their insurance company to cover doctor or hospital bills.

✓ One out of five families (20%) has had to change physicians because of a change in health insurance coverage.

✓ Four percent of families have delayed getting medical treatment for a family member due to an inability to physically leave the home, while one in five (22%) have delayed treatment due to cost. Fourteen percent of those delaying treatment due to cost say the medical condition needing treatment was very serious.

✓ Declining proportions of American adults are confident that they can afford usual medical costs (72%), a major illness (55%), or long-term care (35%); four out of five (80%) say they would be willing to pay out of pocket for routine care if they were confident that their insurance would cover more expensive care.

✓ Almost half (45%) think the government should set the standards for what services should be covered by health insurance; thirty-one percent think doctors, and ten percent think insurance companies, should set the standards.

✓ Eight out of ten survey respondents (79%) have a personal physician, and one-fourth (26%) of those 1,203 individuals say they would like to get to know their doctor better.

✓ Seventy-eight percent of survey respondents went to a doctor less than one year prior to the survey.

✓ Four out of five (79%) American adults discuss treatment options, but only one third (35%) discuss fees, with their doctors prior to treatment. A majority (57%) would like their doctors to spend more time discussing fees before treatment.

✓ Two-thirds (66%) say their doctors review all their medications before recommending treatment or prescribing drugs; seventy percent say they always tell their doctors if they have questions about or problems with medications.

✓ Seven out of ten (72%) say their doctors have

discussed preventive medical information with them; eighty-eight percent believe personal health habits are very important in preventing health problems.

✓ One-fourth of Americans (26%) think there are too few doctors in their own community, while eleven percent think there are too many. A plurality (47%) believe that doctors in their community spend too little time in activities such as health fairs and speaking at schools and civic meetings.

✓ Majorities think that the number of malpractice suits against doctors is higher than justified (63%), that awards are usually too high (55%), and that a ceiling should be set on pain and suffering awards (71%).

✓ If wanting to complain about the treatment received from a doctor, and assuming a complaint-resolution mechanism within several types of organizations, most Americans would prefer to take their complaint to the state medical licensing board (29%), the local medical society (24%), or the AMA (23%) rather than a local (10%) or federal (6%) government agency.

✓ Seventy percent of American adults think doctors are usually up-to-date on the latest advances in medicine, and sixty-five percent think most doctors take a genuine interest in their patients, but only thirty-one percent agree that doctors' fees are usually reasonable.

✓ Seventy-one percent agree that doctors keep patients waiting too long in their waiting rooms, sixty-three percent say doctors do not involve patients enough in deciding on treatment, and fifty-six percent believe that doctors don't care about people as much as they used to.

✓ Seventy-two percent of American adults think


*(continued)*

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## DEATHS

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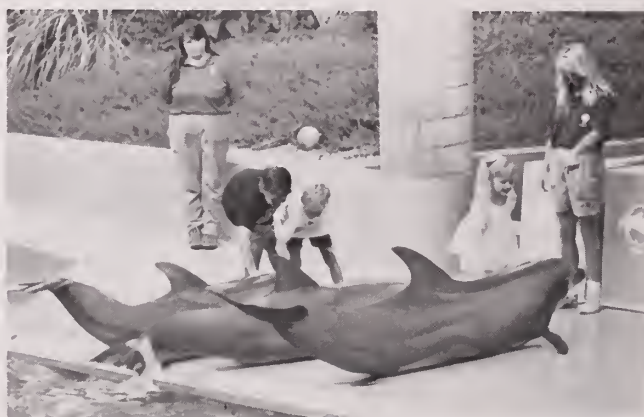
### Jack Allen Harder, MD 1939 - 1992

Jack A. Harder, MD, a native of Cordell, died August 19, 1992. A general practitioner, Dr Harder had practiced in Weatherford since 1975. He earned his medical degree at the University of Oklahoma College of Medicine in 1973. Dr Harder completed his internship and residency at Baptist Medical Center in Oklahoma City. 



## Dining with dolphins

### OSMA hosts picnic at OKC Zoo to welcome new medical students



**F**irst-year medical students, their families, and OSMA leaders and staff were the invited guests at the annual OSMA Student Picnic on August 21, and this was not the year to stay home.

The popular event, formerly held at OSMA headquarters, was moved to the Aquaticus pavilion at the Oklahoma City Zoo. Ample shaded seating, cool breezes, and traditional picnic fare—burgers and hot dogs with all the trimmings, beans, potato salad, brownies, beer and soft drinks—kept a large crowd on hand until sundown. A splash-filled Aquaticus show with sea lions and dolphins capped the evening for everyone.

The picnic welcomes the new class of medical students, introduces them to organized medicine in Oklahoma, and gives them an opportunity to meet one another before settling into their studies. □

The dolphins got a lot of attention (above left) and were the hit of the evening. Several of the youngsters at the picnic got to meet the dolphins "up close and personal" (above right). With her keeper looking on, Amber shared a few of her toys with some of the students in the audience (right).



## AMA survey results *(continued)*

it is very important for their doctor to be involved with the American Medical Association, and sixty-four percent think the doctor's involvement in his/her national specialty society is very important.

✓ Eighty-seven percent believe the American Medical Association is a reliable source of information on health; a slight majority think the AMA is doing an excellent (7%) or good (44%) job to help assure quality medical care to Americans; seventeen

percent think the AMA is doing an excellent (2%) or good (15%) job to help assure affordable care.

✓ Sixty-three percent of Americans support the use of animals in biomedical research; seventy-eight percent believe the use of animals in research is necessary for medical progress; seventy-one percent favor allowing biomedical researchers to use animals that otherwise would be put to death in the local pound; thirty-eight percent are aware that the government regulates the treatment of animals used in medical research. □



Oklahoma State Department of Health

## Environmental and occupational health histories can be helpful



Primary care physicians are rarely presented with patient symptoms that immediately indicate an environmental or occupational illness. Recognizing the environmental etiology of an illness can help the physician provide appropriate case management and can help identify additional cases of illness in the workplace or the community. An appropriate environmental and occupational health history can assist the physician in developing a qualitative assessment of the patient by considering the patient's environment at the home and in the workplace and the types of hazardous substances present to determine if exposure could be related to the health effects in question.

An extensive environmental/occupational history is not necessary for every patient. However, the physician should ascertain current and past longest-held jobs; exposure to fumes, chemicals, dust, loud

***In addition  
to current exposures,  
the clinician must consider the  
long-term or latent effects  
of past exposures...***

noises, or radiation; and whether a possible temporal relationship between symptoms and location (ie, work or home) may exist. The physician should also ask about other habits such as smoking, alcohol consumption, and use of medications.

Details about the non-work environment often provide useful information for the physician. To determine possible home and community sources of exposure to environmental contaminants, the physician should inquire concerning proximity of the home to industries, hazardous waste sites, or recent chemical spills; sources of drinking water; other possible sources of community pollution; age, construction, and heating source of the home; hobbies and crafts; and use and storage of garden and other chemicals. In addition to current exposures, the clinician must consider the long-term or latent effects of past exposures to agents such as asbestos, radiation, and chemical carcinogens.

Certain patient groups are at a higher risk for harm from hazardous substance exposure. The physician may consider an environmental and occupational health history when evaluating the following groups or conditions: *children* may have greater exposure to toxins such as heavy metals, and exposures may be more detrimental to the developing body; *pregnant women* dictate increased concern for workplace and environmental exposures; *cardiovascular disease* may be exacerbated by exposure to chemicals like solvents, which produce carbon monoxide as a metabolite or direct exposure to stressors on the job; *respiratory problems* may be aggravated by environmental exposure; *pre-existing renal or liver disease* can severely limit a patient's ability to handle chemicals which are metabolized in the liver or excreted by the kidneys; and *the elderly* have special needs particularly when hobbies such as gardening, woodworking, and crafts may increase exposure to certain hazards.

An extensive environmental/occupational health history can be a helpful tool when the physician is confronted with a complex medical problem. There are very few "marker" diseases such as mesothelioma, caused by asbestos exposure, and hepatic angiosarcoma, caused by exposure to vinyl chloride. Environmental or occupational exposure should be considered as part of the differential diagnosis for many illnesses. Examples of difficult conditions, the diagnosis of which can benefit from a thorough history, are carpal tunnel syndrome, pneumonitis, peripheral neuropathies, and dermatitis. Physicians should consider a complete environmental and occupational history when confronted with other situations, such as acute or chronic respiratory disease with no known cause; acute or chronic skin disease with no known cause, especially contact dermatitis; neurological conditions with no known cause; any form of cancer; liver disease; reproductive system problems; coronary artery disease, especially when symptoms worsen; back and musculoskeletal problems; hearing impairment; or illness of unknown cause. □

*(This article was supported, in part, by a grant from the US Agency for Toxic Substances and Disease Registry.)*

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Yohimbine exerts a stimulating action on the mood and may increase anxiety. Such actions have not been adequately studied or related to dosage although they appear to require high doses of the drug. Yohimbine has a mild anti-diuretic action, probably via stimulation of hypothalamic centers and release of posterior pituitary hormone.

Reportedly, Yohimbine exerts no significant influence on cardiac stimulation and other effects mediated by B-adrenergic receptors, its effect on blood pressure, if any, would be to lower it; however no adequate studies are at hand to quantitate this effect in terms of Yohimbine dosage.

**Indications:** Yocon® is indicated as a sympatholytic and mydriatic. It may have activity as an aphrodisiac.

**Contraindications:** Renal diseases, and patient's sensitive to the drug. In view of the limited and inadequate information at hand, no precise tabulation can be offered of additional contraindications.

**Warning:** Generally, this drug is not proposed for use in females and certainly must not be used during pregnancy. Neither is this drug proposed for use in pediatric, geriatric or cardio-renal patients with gastric or duodenal ulcer history. Nor should it be used in conjunction with mood-modifying drugs such as antidepressants, or in psychiatric patients in general.

**Adverse Reactions:** Yohimbine readily penetrates the (CNS) and produces a complex pattern of responses in lower doses than required to produce peripheral alpha-adrenergic blockade. These include, anti-diuresis, a general picture of central excitation including elevation of blood pressure and heart rate, increased motor activity, irritability and tremor. Sweating, nausea and vomiting are common after parenteral administration of the drug.<sup>1,2</sup> Also dizziness, headache, skin flushing reported when used orally.<sup>1,3</sup>

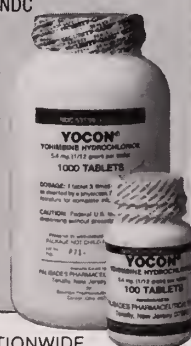
**Dosage and Administration:** Experimental dosage reported in treatment of erectile impotence.<sup>1,3,4</sup> 1 tablet (5.4 mg) 3 times a day, to adult males taken orally. Occasional side effects reported with this dosage are nausea, dizziness or nervousness. In the event of side effects dosage to be reduced to 1/2 tablet 3 times a day, followed by gradual increases to 1 tablet 3 times a day. Reported therapy not more than 10 weeks.<sup>3</sup>

**How Supplied:** Oral tablets of Yocon® 1/12 gr. 5.4 mg in bottles of 100's NDC 53159-001-01 and 1000's NDC 53159-001-10.

#### References:

1. A. Morales et al., New England Journal of Medicine: 1221, November 12, 1981.
2. Goodman, Gilman — The Pharmacological basis of Therapeutics 6th ed., p. 176-188. McMillan December Rev. 1/85.
3. Weekly Urological Clinical letter, 27:2, July 4, 1983.
4. A. Morales et al., The Journal of Urology 128: 45-47, 1982.

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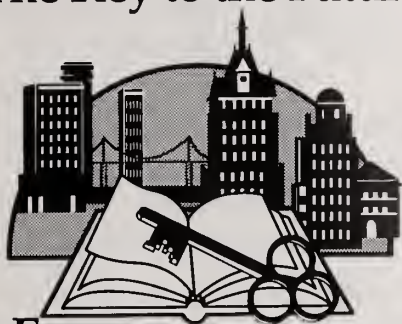
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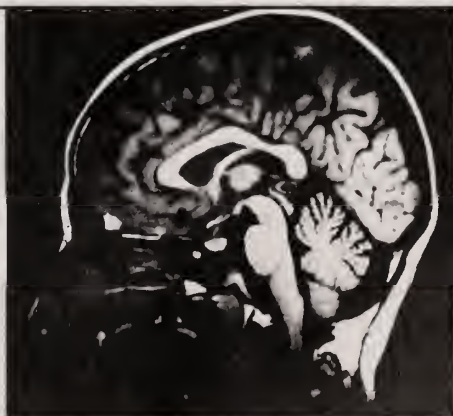


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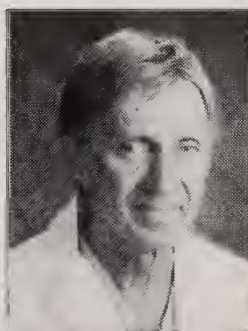
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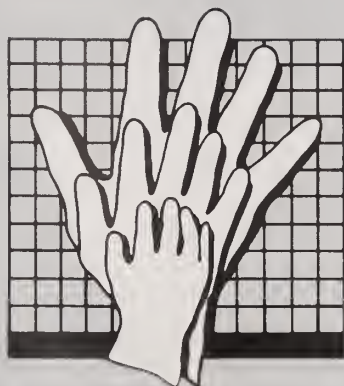
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All manuscripts should adhere to the style adopted by the American Medical Association as illustrated in JAMA and detailed in the AMA's *Manual of Style*. An abstract of 150 words or less should accompany each paper and should state the exact question considered, the key points of methodology and success of execution, the key findings, and the conclusions directly supported by these findings. Footnotes, bibliographies, and legends for illustrations should be on separate sheets. References are to be listed in the order of their appearance in the article.

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## Auxiliary membership drive underway

The OSMA Auxiliary's annual membership drive is well underway in 22 county auxiliaries in Oklahoma. Last year the OSMA Auxiliary increased membership by 4% and was successful in organizing a new auxiliary in Creek County. With that addition, the OSMA Auxiliary proudly boasts a membership of over 1,300 ... and growing.

To join the OSMA Auxiliary, one must fill only one qualification—be the spouse of a physician who is a member of the OSMA. Our members come from a variety of backgrounds: homemakers, professionals, and the newly married as well as the long-time medical spouse. Our members possess all levels of educational backgrounds, a variety of ethnic heritages, and are well represented by a growing number of male members.

Why do they all join? Because they feel the need to support medicine through their membership! Auxiliary membership works to strengthen the Oklahoma State Medical Association in its program to improve the quality of life through health education and services. This effort is carried out in communities throughout Oklahoma as county auxiliaries develop and staff projects to educate Oklahomans about the need to improve or maintain good health practices. Each county auxiliary is strengthened by the close bond between the OSMA Auxiliary and the AMA Auxiliary. Leadership training and a large network of liaisons reaching every board position, along with a variety of printed materials, provide a constant resource to improve the quality of auxiliary work and member satisfaction.

Much of our attention is aimed at legislation and the impact government continues to have on medical families. Our fundraising efforts for medical education continue to climb. While each aspect of membership is important, perhaps the most powerful is the

strength and understanding that comes from affiliation with other medical spouses. Much is written about the medical marriage and unique pressures that medical families face. Medical auxiliary offers an opportunity to form friendships based on shared experience, forming a bond of caring and understanding. Physicians and their families benefit from the close relationships that develop and are strengthened by that support.

Throughout Oklahoma physicians and their spouses are looked upon as cornerstones of the community. Membership in medical auxiliary provides an opportunity to join other medical families as we collectively work to improve relations within our medical community as well as the communities that we call home.

Each physician spouse should join auxiliary in order to build a stronger medical environment and strengthen the medical family. To join is a privilege that should not be missed. Encourage your spouse and friends to join us in our membership drive. It is important to our future that we remain strong in order to maintain our presence as supporters of a healthier future.

Upon joining a county auxiliary in Oklahoma, dues are automatically shared with the Oklahoma State Medical Association Auxiliary and the American Medical Association Auxiliary, enrolling each member in all three levels of membership. In counties where there is no organized county auxiliary, a spouse may join as a member-at-large. A reduced-rate dues payment enrolls the member-at-large in the OSMA Auxiliary and the AMA Auxiliary. For membership information, call Judy Lake at the OSMA offices, 405-843-9571.

—Jeary Seikel  
*First Vice-President, OSMAA*



■ **"Brown bag" medicine reviews are being** encouraged this month by the National Council on Patient Information and Education (NCPIE) as part of their annual Talk About Prescriptions observance. The review is known as a "brown bag" because in many cases patients literally put all their prescription and OTC medicines into a brown bag and take them to a health professional. The physician, pharmacist, or nurse assesses the medicine regimen for medically serious side effects or interactions, as well as proper use. The review offers substantial benefits to physicians by enabling them to learn about medicines prescribed by other doctors that may alter the patient's current therapy and future prescription patterns, and also can help to identify noncompliance problems. Such interaction with the patient fosters better health, better outcomes, and greater patient satisfaction. Doctors are encouraged to conduct brown bag reviews and to promote brown bag programs in their communities. Brown Bag Medicine Review Kits are available for \$45 from: NCPIE, Brown Bag Kit, 666 11th Street, Suite 810, Washington, DC 20001, or fax with purchase order number to (202) 638-0773.

■ **The Federal Bureau of Investigation (FBI)** and the AMA are involved in discussions about how they can work together to prevent health care fraud. The FBI told the association that physicians are not the target of the investigation. Instead, the bureau has focused on pharmacies that billed Medicare and Medicaid for prescriptions they did not fill. The FBI believes that physicians can play an important role in identifying and reporting such abuses, said AMA General Counsel Kirk Johnson, JD. The FBI has asked the association to participate in training sessions for about 200 agents.

■ **A five-day radiation safety specialist training** program will be presented at two locations in 1993. Conducted by the Oklahoma State University Engineering Extension, the program will offer professional development opportunity for technicians and managers who work with radioisotopes or radiation sources. The dates are March 8-12, 1993, in Oklahoma City and August 9-13, 1993, in Boulder, Colo. Fee is \$850 per person, or \$795 per person for organizations enrolling two or more persons at the same time. For information call OSU Engineering Extension, (405) 744-5714. Fax information requests to (405) 744-5033.

■ **The AMA and the American Academy of Pediatrics (AAP)** have launched Healthy Youth 2000, a campaign to promote the health of America's youth from infancy through adolescence. Physician enrollment applications and campaign updates are appearing in AMA and AAP journals. Health information directed to youth and their parents will be placed in consumer publications in early 1993. The campaign is the AMA's fourth national health program since 1988. Previous campaigns focused on cholesterol, women's health, and smoking cessation. Physicians may enroll by writing to Healthy Youth 2000, 3575 Cahuenga Boulevard West, Suite 400, Los Angeles, CA 90068.

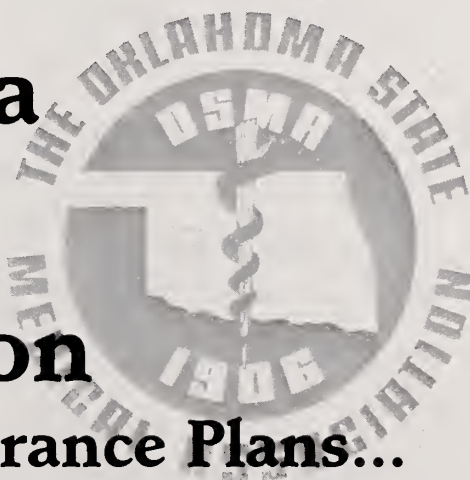
■ **"The Specialist in Obstetrics and Gynecology and Primary Care for Women"** is a program to be presented December 4-6, 1992, in Dallas. Sponsored by the Southwestern Gynecologic Assembly, the meeting will be at the Westin Hotel, Galleria Dallas. The meeting has been approved for 13 cognates, Formal Learning, by the American College of Obstetricians and Gynecologists. For information contact Kathryn Waldrep, MD, Registration Chairman, Southwestern Gynecologic Assembly, 7777 Forest Lane, Bldg. C, #204, Dallas, TX 75230, (214) 661-4660. Fee for the meeting is \$325.

■ **The AMA Center for Health Policy Research** is standardizing data on health expenditures in 16 industrial countries. Using the standardized data, the center found that the United States spends more on health care than the other countries, but the difference was not as great as had been thought. In an updated report, the center said that total health spending as a percentage of gross national product ranged from a high of 106% in the United States to a low of 6.6% in the United Kingdom, for an average of 8.1%.

■ **Congratulations are in order for Tulsa County Medical Society**, celebrating its 85th anniversary this year. Membership in TCMS has increased by 25% in the last decade, keeping pace with growth in state and national physician organizations. Membership on August 1 totaled 1,056, according to *Tulsa Medicine*. The society had 12 charter members when it was founded in 1907. □



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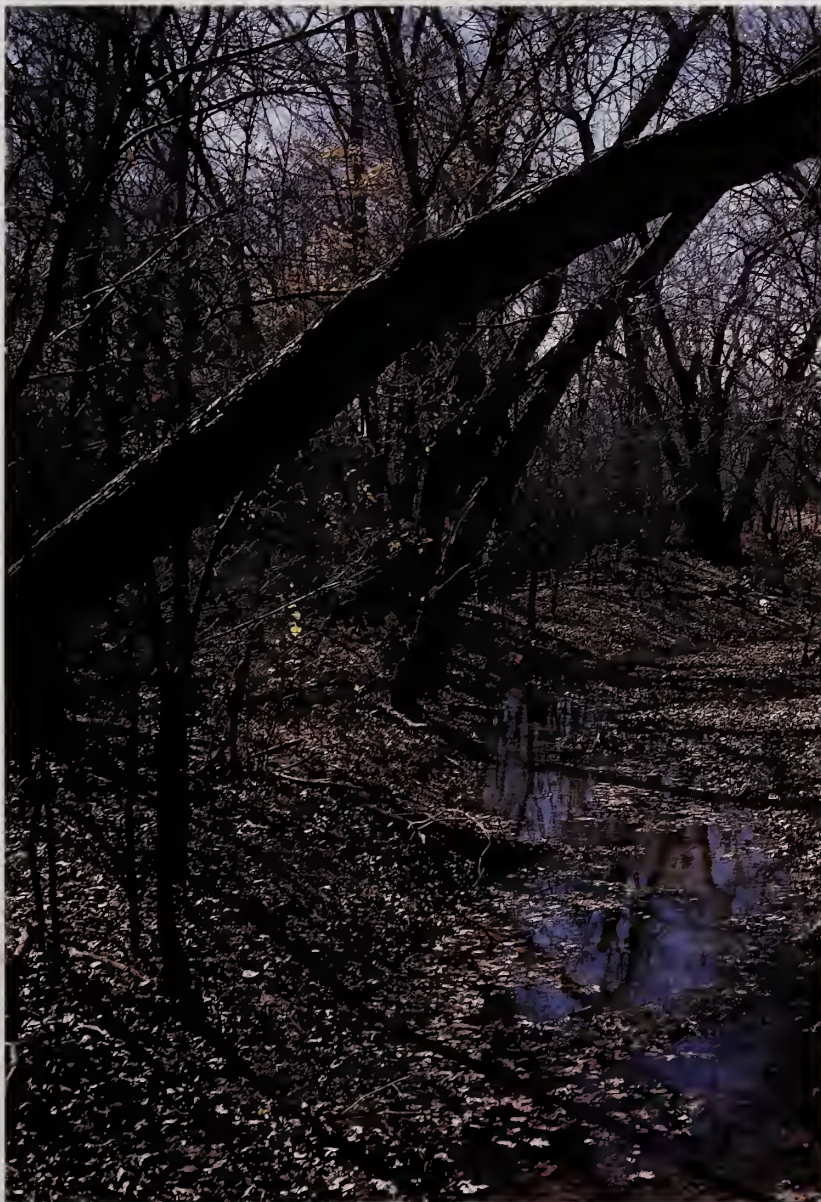
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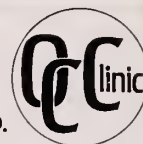
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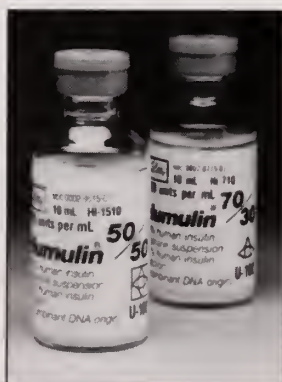
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## On Treating Arachnidism

In the cosmic order of human affairs, spider bites are small potatoes, but Oklahoma physicians treat numerous cases every year. The dermatology literature lists more than 60 arachnid species in the US that may produce clinically significant bites in humans, and many of these species live in Oklahoma. Approximately 8% of spider bites cause brief systemic symptoms such as chills, fever and myalgia. Another 15% may lead to focal skin necrosis or ulceration and require prolonged care or skin grafting. Also, rare fatalities from hemolysis and renal failure do occur. That the vast majority of spider bites require no treatment is obscured in the anxiety generated by the rare fatality and the occasional episodes of focal skin necrosis.

Among physicians, both the diagnosis and the treatment of spider bites are somewhat neglected arts. Most of the patient anxiety focuses on two local species, the black widow spider (*Latrodectus mactans*) and the brown recluse spider (*Loxocoeles reclusa*)—also known as the “fiddleback” spider. While the black widow bite is more likely to produce systemic symptoms and the brown recluse bite to produce focal skin necrosis, the actual vector is usually unknown and the signs of envenomation may overlap. In practice many bites are “dry bites” and cause no significant injury.

Since the patients seldom know what bit them, anxiety often can be allayed by simply examining the bite site with a good light and a 20-diopter lens. A spider bite when magnified shows two typical ovoid or round blanched marks separated by a thin strip of uninvolved skin. While these diagnostic marks may be obscured with time or necrosis, most stinging insects leave a solitary round puncture wound. The “stung” patient is usually much less anxious than the “spider bite” patient, after learning the true nature of the wound.

The therapeutic ideal in spider bite therapy is the prevention of skin necrosis, systemic symptoms, and the rare incident of red cell hemolysis. These goals remain elusive.

Spider venom has been designed by Mother Nature to paralyze insects quickly, and the principal component of most arachnid venom can be chemically characterized as sphingomyelinases. These enzymes quickly disrupt nerve impulses and paralyze

the spiders' insect prey. In the human skin, the arachnid venom blocks autonomic nerve conduction, and an area of arteriolar spasm results. Focal ischemic necrosis may result if severe arteriolar spasm persists.

Dr. Carl D. Osborn has written in this JOURNAL of the use of direct current to treat spider bites. He records an impressive number of arachnidism incidents with near total success in preventing clinically significant areas of skin necrosis. The nature of electrical therapy precludes a placebo controlled series, and doubt remains as to the effect of electricity on the venom. However, Osborn's large number of cases without skin slough suggests that direct current therapy has biological significance.

In this issue of the JOURNAL, Dr. Steven M. Barrett discusses the history and shortcomings of electrotherapy of venomous bites, and proposes a placebo controlled series for spider bites using dapsone on the active limb. As dapsone has a very narrow antibiotic spectrum and is not known to relieve arteriolar spasm, its use to prevent the ill effects of arachnid bites is interestingly speculative. We will look forward to the report of the effect of this interesting compound on spider bites in a placebo-controlled series.

The chemical theory that electrons will detoxify enzymatic venoms is appealing, although laboratory confirmation of this concept does not yet exist. Human skin is known to have a relatively high resistance to the passage of electric current. We would speculate that the technique of iontophoresis might offer a kinder, gentler method of adding electrons to the intracutaneous puddle of venom. Also, we wonder if the iontophoresis of an arteriolar dilating agent would simultaneously detoxify the venom and reduce the area of focal skin necrosis.

Spider bites, while rarely fatal, do cause morbidity, skin necrosis requiring grafting, and considerable patient anxiety, and we encourage these physicians in the difficult task of developing new and better therapy for this problem.

*Ray V. McIntyre, M.D.*

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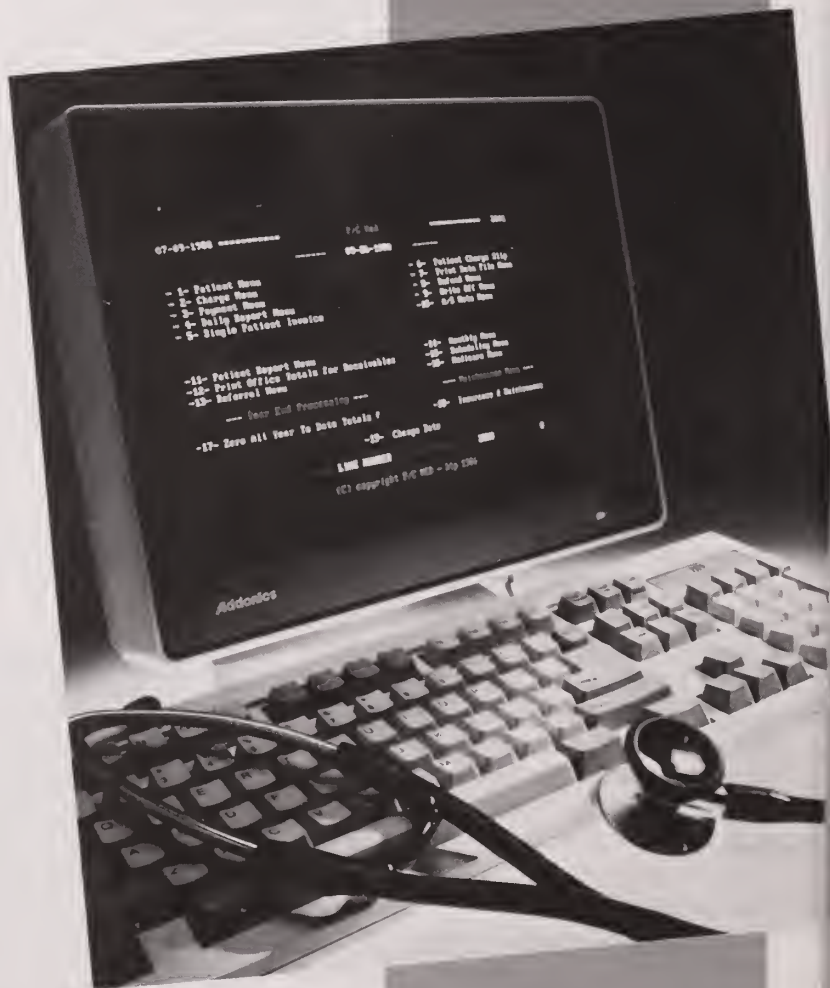
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## So What Have You Done for Me Lately?

How often we've heard that old phrase, "So you saved my life in the war, but what have you done for me lately?" This frequently is the question members ask of the Oklahoma State Medical Association. I can tell you that the Oklahoma State Medical Association is, has been, and will continue to be very busy on your behalf. The onslaught of laws, regulations, and changes that have been occurring in American medicine is unbelievable. Some of these changes and regulations are going to have immense and unthought of impact on you and your patients, especially those patients who are seen in clinics throughout the state.

One of the prime examples of this is the CLIA regulations and their effect on county health departments, charity clinics, and other institutions. A typical example is the hanging drop used to diagnose vaginal infections. This goes far beyond the dipstick type of laboratory procedures that unfortunately are done in most clinics. Microscopes will be locked up. No longer will these diagnostic tests be available. Along with the CLIA regulations, the OSHA regulations are going to be devastating in terms of cost. While all of us recognize the need to protect ourselves, other health care workers, and patients, the OSHA regs cross the line between common horse sense and our ability to care for patients. These regulations may prohibit clinics that are borderline financially from caring for patients.

Your Oklahoma State Medical Association works diligently on these and many other issues. This year OSMA committees are working on such issues as Medicare, Medicaid, Drug Utilization Review (which will go into effect in January), the PRO, PLICO, and PLICO Health. I am particularly pleased to report that the OSMA and the Oklahoma Bar Association



maintain a joint committee to address issues of mutual interest. This year the top priority for the OSMA/OBA committee will be to attain some liability relief for physicians and attorneys who volunteer their services.

The OSMA also is working in cooperation with the OU Health Sciences Center and the Oklahoma Academy of Family Physicians to encourage passage of the bond issue that would finally permit construction of a Family Medicine Building at the HSC.

This is an appropriate time to remind OSMA members that we all have a unique pipeline to national policymaking regarding physician reimbursement through Dr. Perry Lambird, who is chair of the AMA Council on Medical Service.

At the staff level, efforts are underway to update the OSMA budget process and revise the pension plan. In addition, work is already underway in preparation for the 1993 legislative session and a possible special session in December if the provider tax fails.

Yes, your Oklahoma State Medical Association, which means you, is busy on a daily basis with untold numbers of physicians giving of their time, their expertise, their knowledge, and their love for their fellow man to make the OSMA a better association for you. I encourage each and every one of you to participate. If you have a special area of interest, please contact me, and at the same time, I urge every physician who is not a member of the Oklahoma State Medical Association to become an active participating member. Together we can meet the challenge.

A handwritten signature in dark ink, reading "James J. Dannel M.D.", with a large, stylized loop at the beginning.



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## Symposium on Antimicrobial Therapy

# II. Introduction to $\beta$ -Lactam Antibiotics

Ronald A. Greenfield, MD

This is the second in a series of articles by Dr Greenfield on antimicrobial therapy.

The  $\beta$ -lactam antibiotics continue to be the most commonly used antimicrobial agents. Therefore, this segment will serve as an introduction to this broad family. There are now four groups of agents in clinical use in this family: the penicillins, the cephalosporins, the carbapenems, and the monobactams. The skeletal structures of these agents are shown in Figure 1. This is not intended to be a lesson in medicinal chemistry, and structure-function relationships, although important,<sup>1</sup> will not be further discussed; however, it is useful to review the nature of a  $\beta$ -lactam ring and the similarities of chemical structures of the drugs in this family.

There are several reasons why the  $\beta$ -lactam antibiotics are so commonly used. It is likely that the historical precedent plays a role in this; these are the oldest true antibiotics (chemicals with antimicrobial activity produced by microbial organisms). Second, they are traditionally considered to be bactericidal agents, and when given a choice, physicians prefer bactericidal rather than bacteriostatic therapy. It is to be noted, however, that the activity of new broad spectrum  $\beta$ -lactam antibiotics against aerobic Gram-negative bacilli is often bacteriostatic. Third, physicians are comfortable with the limited toxicity of  $\beta$ -

lactam antibiotics. Except for hypersensitivity reactions, the incidence of serious adverse reactions with these agents is low. Perhaps these drugs most closely approximate Ehrlich's concept of a "magic bullet" that kills microbes but does not damage host cells. Finally, physicians are familiar with the high toxic-to-therapeutic ratio achievable with these drugs. For example, penicillin serum levels of 20  $\mu\text{g}/\text{ml}$  are achievable with a dosage of about 20 million units of penicillin/day, without undue toxicity. A sensitive pneumococcus is inhibited by a penicillin concentration of  $<0.1 \mu\text{g}/\text{ml}$ . Thus the toxic to therapeutic ratio is  $>200:1$ . Such ratios are not often achievable with other classes of antimicrobials. However, with newer extended-spectrum  $\beta$ -lactam antibiotics and difficult pathogens such as *Pseudomonas aeruginosa*, such ratios are not achievable.

### Mechanisms of Action

The mechanisms of the microbicidal effects of  $\beta$ -lactam antibiotics are not fully elucidated, but remarkable progress is being made. Such an understanding is perhaps the greatest hope for nonempirical development of new  $\beta$ -lactam antibiotics. Additionally, a fundamental understanding of the mechanisms of action of antimicrobial agents and the mechanisms of microbial resistance to these agents is essential to understanding the usefulness of these drugs now and as it continues to change.

There are three key processes in  $\beta$ -lactam action. First, the antibiotic must gain access to its site of action. This involves penetration of the bacterial cell

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wall. Second, the antibiotic must be resistant to the action of  $\beta$ -lactamases, bacterial enzymes which cleave the  $\beta$ -lactam ring and render the antibiotic microbiologically inactive. Third, the antibiotic must interact with specific bacterial receptors for the antibiotic, the penicillin-binding proteins.

We all learned that penicillin was a structural analogue of d-alanyl-d-alanine, the terminal unit in peptidoglycan cell wall synthesis, and thus inhibited cell wall synthesis. It was hypothesized that with cell wall synthesis thus inhibited, cytoplasmic growth outpaced cell wall synthesis, and mechanical rupture of the cell wall ultimately led to cell death.<sup>2</sup> Although this is fundamentally correct, additional observations have enabled more explicit understanding of the processes involved. As with most fungal toxins,  $\beta$ -lactam antibiotics bind to specific receptor targets. In this case, these are the microbial penicillin-binding proteins (PBPs),<sup>3</sup> and 10 or more of these have now been characterized. The PBPs are enzymes (transpeptidases, carboxypeptidases, endopeptidases)

that are involved in the final steps of assembling and reshaping the bacterial cell wall.<sup>4</sup> The interaction of various  $\beta$ -lactam antibiotics with PBPs varies with the affinity of the various drugs for the PBPs. The interaction of  $\beta$ -lactam antibiotics with some PBPs results in cell death, whereas the interaction with other PBPs results in a nonlethal bacteriostatic effect. One particular PBP interaction triggers a suicidal autolysis mediated by an amidase, another triggers a nonautolytic bactericidal effect.<sup>5</sup> A third reported bactericidal effect of penicillin therapy is hydrolysis of cellular RNA.<sup>6</sup>

### Mechanisms of Resistance

First, a frightening but true thought: there has never been a  $\beta$ -lactam antibiotic released to which some microorganism has not developed resistance. As you have probably suspected, there are mechanisms of resistance to match each of the key processes in the action of the  $\beta$ -lactam antibiotics. There are mechanisms of resistance involving the ability of the  $\beta$ -

## The $\beta$ -Lactam Antibiotics

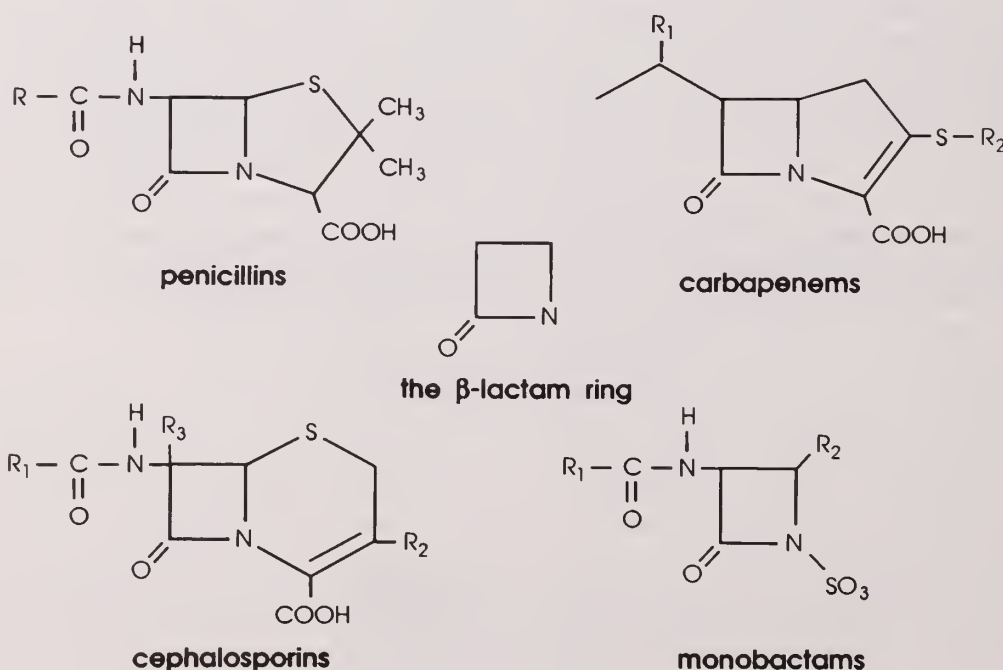


Figure 1. The structure of a  $\beta$ -lactam ring and the skeletal structures of the major classes of  $\beta$ -lactam antibiotics are shown. R groups designate variable regions of specific drugs. Changes of these entities

result in the different antimicrobial spectrum of activity, different susceptibility of  $\beta$ -lactamase destruction, and different pharmacokinetic properties of the various specific drugs in each class.



lactam antibiotic to gain access to the PBPs. The PBPs are cell membrane-associated enzymes, so the antibiotic must penetrate the cell wall to reach the cell membrane. The cell wall of Gram-positive bacteria is a loose network that poses no significant challenge to penetration by  $\beta$ -lactam antibiotics. However, the cell wall of Gram-negative bacteria is a complicated structure of lipids, proteins, and polysaccharides, and the  $\beta$ -lactam antibiotics traverse the cell wall through specialized channels or pores created by porin proteins in the cell wall. Mutations of porins causing reduced penetration of  $\beta$ -lactam antibiotics have been described. This appears to be a major mechanism of resistance of *Pseudomonas aeruginosa* to imipenem.

By far the most clinically significant mechanism of resistance to  $\beta$ -lactam antibiotics is microbial production of  $\beta$ -lactamases, a family of enzymes which irreversibly inactivate  $\beta$ -lactam antibiotics. There are many such enzymes, and their nomenclature and classification are laborious.<sup>7,8</sup> A few key points are worthy of recall.  $\beta$ -lactamases of Gram-positive bacteria are secreted into the environment as exoenzymes.  $\beta$ -Lactamases of Gram-negative bacteria are generally retained in the periplasmic space, but as organisms die, these can accumulate in pus.<sup>9</sup> The genetic information for  $\beta$ -lactamases can be encoded either chromosomally or extrachromosomally on plasmids or transposons; the ready transfer of plasmids and transposons between microorganisms leads to rapid spread of  $\beta$ -lactamase production and thus  $\beta$ -lactam resistance.<sup>4</sup> Some  $\beta$ -lactamase production is constitutive; the production of others is inducible, ie, exposure to  $\beta$ -lactam antibiotics stimulates production of more  $\beta$ -lactamase.<sup>10</sup> Not all  $\beta$ -lactamases are inhibited by currently available  $\beta$ -lactamase inhibitors. The susceptibility of  $\beta$ -lactam antibiotics to various  $\beta$ -lactamases is the primary means of their classification.

Finally, bacteria can resist  $\beta$ -lactam antibiotics by mutations involving the PBPs. This mechanism is clinically important, as it is at least partially responsible for resistance of *Staphylococcus aureus* to semisynthetic penicillinase-resistant penicillins, pneumococcal resistance to penicillin, and chromosomal resistance of gonococci to penicillin.

### Toxicity of $\beta$ -Lactam Antibiotics

A summary of the potential adverse reactions that can occur with  $\beta$ -lactam antibiotic therapy is presented in Table 1. Although specific agents that are most commonly associated with specific adverse reac-

tions are presented, it is to be emphasized that *any* of these adverse effects can be seen with therapy with *any*  $\beta$ -lactam antibiotic. Allergic reactions are by far the most common adverse effect of the  $\beta$ -lactam antibiotics. A number of allergic reactions occur, as shown in Table 1, involving various known and indeterminate types of hypersensitivity reactions. In fact, many of the other adverse reactions listed in Table 1 are also known or suspected allergic reactions.

An estimated 3% to 10% of the population are allergic to penicillin.<sup>11</sup> To anticipate a possible allergic reaction, a history of prior allergic reaction to a  $\beta$ -lactam antibiotic should be sought. Furthermore, an effort should ensue to differentiate IgE-mediated hypersensitivity from other allergic reactions that are far more common and far less likely to be immediately life-threatening. Such a history does not necessarily indicate a reaction will occur again, however, as allergy may wane. Nevertheless, patients with a history of immediate IgE-mediated hypersensitivity should not be considered further for therapy with any  $\beta$ -lactam antibiotic (with the possible exception of aztreonam),<sup>12</sup> unless there is no equivalently effective alternative therapy available, a situation which, fortunately, has become progressively less common. When penicillin therapy is strongly indicated and the history of a possible IgE-mediated hypersensitivity reaction is unclear, penicillin skin testing is useful.<sup>12,13</sup> Although a negative skin test reaction does not entirely preclude immediate hypersensitivity, most physicians administer a small dose of penicillin (1000 U) and proceed with therapy if the skin test is negative.<sup>11</sup> If patients with a history of immediate hypersensitivity to penicillins or a positive skin test absolutely require penicillin therapy (treatment of neurosyphilis is one such indication), desensitization should be performed, preferably in an intensive care unit, with adequate precautions for management of an anaphylactic reaction.<sup>14</sup>

Allergic mechanisms of adverse reactions to penicillin other than those mediated by IgE antibodies are more common and present in various forms: maculopapular skin eruptions and drug fever are the most common of these. A history of such a reaction to a penicillin is generally considered to urge use of another class of antibiotic; most physicians are comfortable using a cephalosporin, carbapenem, or monobactam in this setting. The likelihood of cross-reactivity with a cephalosporin is estimated to be 3% to 5%.<sup>11</sup>

Other side effects occur, as presented in Table 1.

Table 1. Adverse Reactions with  $\beta$ -Lactam Antibiotics

Type of Reaction	Frequency (%)	Most Frequent With
<b>Allergic</b>		
IgE antibody	0.01	Penicillin G
Anaphylaxis		
Laryngeal edema		
Early urticaria ( $\leq 72$ hr)		
Cytotoxic antibody	Rare	Penicillin G
Positive Coomb's test		
Antigen-antibody complex	Rare	Penicillin G
Serum sickness		
Delayed hypersensitivity	4-8	Ampicillin
Contact dermatitis		
Idiopathic	4-8	Ampicillin
Maculopapular skin eruptions		
Drug fever		
Late onset urticaria		
Eosinophilia		
<b>Gastrointestinal</b>		
Nausea, vomiting	Variable	Any
Diarrhea	25	Any
Pseudomembranous colitis	<1	Any
<b>Hematologic</b>		
Hemolytic anemia	Rare	Penicillin G
Neutropenia	1-4	Nafcillin
Thrombocytopenia	Rare	Piperacillin
Platelet dysfunction	3	Carbenicillin
Hypoprothrombinemia	Variable	Cefamandole
<b>Hepatic</b>		
Elevated transaminases	1-4	Oxacillin
<b>Electrolyte disturbance</b>		
Sodium overload	Variable	Carbenicillin
Hypokalemia	Variable	Carbenicillin
Acute hyperkalemia	Rare	Penicillin G
<b>Neurologic</b>		
Seizures	Rare	Imipenem
Bizarre sensations	Rare	Procaine Penicillin
Neuromuscular irritability	Rare	Penicillin G
<b>Renal</b>		
Interstitial nephritis	1-2	Methicillin
Hemorrhagic cystitis	Rare	Methicillin
<b>Thrombophlebitis</b>		Nafcillin
<b>Superinfections</b>		Cephalosporins
<b>Disulfiram-like reaction with ETOH</b>		Cefamandole

These will be discussed in some further detail as we proceed with discussions of specific  $\beta$ -lactam antibiotics in ensuing articles. These reactions are in large measure quite unusual, except for gastrointestinal distress with oral therapy. In the absence of hypersensitivity reactions, the  $\beta$ -lactam antibiotics remain among the safest therapeutic agents in medicine. Specific  $\beta$ -lactam antibiotics will be detailed in the next three segments of this symposium. □

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# Pelvic Neurilemmomas: A Case Report and Discussion

Philip J. Maguire, MD

**This case report discusses a pelvic neurilemmoma and other neural tumors arising in the pelvic area.**

Neural tumors of the pelvis are exceedingly rare. And there is a considerable amount of confusion about their terminology. Since these tumors are neuroectodermal in origin they can appear in many forms. The cells are thought to have a pluripotential capability.

## Case Report

The patient was a 75-year-old woman, gravida 11, para 11. The initial complaint was pruritus vulvae and vaginal discharge. She also complained of vague right lower abdominal discomfort. Findings on physical examination were essentially normal. The abdomen was soft and no pain could be elicited with deep palpation. The examination of the vulva revealed characteristic signs of mycotic infection. The patient had previously had a hysterectomy but was unsure about removal of the tubes and ovaries. The vaginal mucosa appeared normal. A hard, nonpainful and fixed mass was detected beneath the right vaginal mucosa. The mass was attached to the mucosa and extended to the sacrum, where it seemed fixed. Rectovaginal examination confirmed that the mass did not appear to involve the wall or mucosa of the rectum.

Because the patient was not certain whether the ovaries had been removed and to rule out an intrap-

eritoneal tumor, laparoscopy was performed. The pelvic peritoneum was normal and intact. No masses were found throughout the abdomen. The ovaries had been removed. An incision was then made through the vaginal mucosa and an attempt made to develop a plane around the tumor. However, it was impossible to find a plane and "shell out" the mass. The bulk of the mass was dissected free and removed. Parts of the capsule were adherent to the periosteum of the sacrum and were left in place due to the extreme vascularity.

The microscopic studies indicated a neurilemmoma of a compact, spindle cell variety with some more loosely cellular areas noted also. Cellular palisading consistent with Verocay bodies were seen. A hypervascular background also was noted. No signs of malignancy were present.

## Discussion

Neurilemmomas are sometimes called Schwannomas because of their origin from neural sheath or Schwann cells. They occur in peripheral sensory and motor nerves and also cranial nerves (the exception being optic and olfactory since they lack Schwann cells). There is some predilection for women. These tumors can occur anywhere. They may be multiple and associated with neurofibromas. Microscopically there are many variations. There is generally a spindle-cell appearance and a rather slick texture to the cut surface. Because of their pluripotential ability, exact identification is sometimes difficult. Those with compact cellular areas are referred to as Antoni A

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types and the more loosely organized styles as Antoni B types. Most have some components of both and can be quite vascular. When spindle cells are grouped into a pattern similar in appearance to tactile corpuscles, they are called Verocay bodies.

Ganglioneuromas, on the other hand, tend to consist mainly of mature neurons. Neurofibromas involve the axons and are difficult to dissect free since the fibers penetrate the mass. Neurilemmomas are more likely to surround the nerve and can sometimes be separated from the nerve itself.<sup>1</sup> Multiple neurofibromatosis is, of course, known as von Recklinghausen's disease.

Spinal neurilemmomas are more common in the lumbar area. They can be an extension from the

spinal canal forming a large retroperitoneal mass ("dumbbell tumor"). These tumors are very rare. Lesions of the presacral region in order of frequency are: congenital, inflammatory, neurogenic, and osseous.<sup>2</sup> Neurilemmomas or Schwannomas usually do not recur after excision and practically never undergo malignant degeneration.<sup>3</sup> The above patient has been followed for eleven years without signs of recurrence.

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Dr Maguire has been a gynecologist in private practice in Oklahoma City for 27 years.

# Electrotherapy for Venomous Bites from Snakes and Spiders

Steven M. Barrett, MD; James S. Walker, DO; Maxine Romine-Jenkins, MT

The authors review the history of electrotherapy treatment of venomous snake and spider bites and suggest that more properly designed research trials are needed before such treatment is adopted as a therapeutic option.

Modern electricity began in America with Benjamin Franklin..., and this also may be said of medical electricity, for Franklin at his clinic on Green Street, Philadelphia, with the connivance of medical friends, applied shocks from Leyden jars, and his static generator may still be seen in that city at the Franklin Institute.<sup>1</sup>

Electrical stimulation can enhance the healing of skin ulcerative lesions in both animal models and human subjects.<sup>2</sup> These regimens generally consist of low intensity direct current (200 to 1000  $\mu$ A) or higher voltage (100 to 175 V) pulsed electrical stimulation administered for varying periods of time ranging from daily to several times daily for weeks to months.<sup>3,4</sup> Decubitus ulcers and skin lesions caused by arterial or venous insufficiency healed significantly faster and more completely with the above electrotherapy regimens than did control lesions. The investigators theorized that electrical currents may influence the migratory, proliferative, and functional capacity of fibroblasts and may enhance collagen synthesis.

Recently, electrotherapy of a different nature (stun gun) has been used for treatment of snakebites,

spider bites, and other types of envenomations. Actually, the idea of electric shock treatment for these lesions is not new. A 1787 work mentions electrotherapy of venomous snakebites,<sup>5</sup> and an 1899 US Army publication contains some references to electric shock treatment of snakebite victims.<sup>6</sup> In the 1920s, electric shock for treating bites and stings of venomous animals was suggested in various outdoor and sportsman's magazines.<sup>7</sup> Shock from spark plug wires for the treatment of scorpion stings dates back to the 1940s.<sup>8</sup>

In 1986, Guderian et al published a report of 34 patients in Ecuador with snakebites to the extremities who evidently improved dramatically soon after high voltage low current (20 to 25 kV, less than 1 mA) electric shocks.<sup>9</sup> The authors used 4 or 5 shocks for 1 to 2 seconds each with 5 to 10 seconds between shocks. They devised the technique after learning of an Illinois farmer who administered high voltage low amperage direct current shocks to bee sting sites to prevent his usual severe allergic reactions. Guderian mentioned that other investigators in Ecuador and other countries were using electric shock therapy for envenomations from ants and black scorpions. Since all 34 patients improved and seven who refused shock therapy eventually had complications of their snakebites, the authors concluded that their shock therapy regimen is practicable, successful, and potentially life-saving. They offered several hypotheses to explain the presumably beneficial mechanisms of action of electric shocks in snakebitten patients and recommended a modified portable stun gun with a 9V

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battery that delivers a jolt of about 25 kV and less than 1 mA.

Since Guderian's report, other investigators have forwarded speculations about the possible mechanisms of the therapeutic effect of electric shocks on envenomated tissue.<sup>10</sup> One of the authors of a 1988 report delivered six 0.5- to 1.0-second 40 kV stun gun shocks to three snakebite puncture wounds (from two strikes) in himself. These lesions healed uneventfully as opposed to a fourth unrecognized and unshocked puncture wound which developed a hemorrhagic ulcer.<sup>11</sup> Not surprisingly, high voltage low amperage direct current shocks were soon promoted in the lay literature for field therapy of poisonous snakebites (eg, *Outdoor Life* June 1987, June 1988, and July 1988, and *Backpacker* magazine March 1989).

Guderian's research methodology was incomplete, however. Patient samples were not well defined. For example, were some local patients too severely ill to present to Guderian's study group? And were there unidentified local patients who recovered uneventfully without shock therapy? Furthermore, there was no properly structured control group. What were the characteristics of the seven patients who refused shock therapy, and were these patients similar in important respects to the treated group?

Several recent studies with treatment and control groups have failed to find beneficial effects of electric shock therapy in snakebitten animals. In 1987, mice injected with large doses of rattlesnake venom survived no better when shocked (10 shocks of 20 to 25 kV, less than 1 mA) than not.<sup>12</sup> In 1988, no beneficial effects were observed after electric shocks (25 Hz, 25 kV, 1 mA) from a modified automobile ignition were delivered to rats injected with rattlesnake venom as compared to unshocked envenomated rats.<sup>13</sup> No beneficial effects on morbidity or mortality were reported from a 1988 randomized controlled blinded study of stun gun shocks (40 kV) to rats envenomated with viper venom.<sup>14</sup> In 1989, a smaller study in dogs injected with rattlesnake or cottonmouth venom and shocked with a stun gun (five 20 to 25 kV, less than 1 mA shocks) showed no differences in outcome between shocked (4) and unshocked (2) dogs.<sup>15</sup> Finally, another group of investigators found no beneficial effect on local tissue reaction of shock therapy in rabbits injected with poisonous snake venom.<sup>16</sup>

Adverse effects of shock therapy have occurred. One snakebitten patient suffered an acute myocardial infarction after electroshock therapy of his bite site.<sup>17</sup> Another patient lost consciousness when a spark plug wire was applied to his upper lip bite site,

and the automobile engine was started and repeatedly revved to 3,000 rpm over 5 minutes. This patient eventually recovered in the hospital after crotalid antivenin and aggressive medical therapy but suffered some tissue loss from his upper lip.<sup>18</sup>

By 1990, over 7,000 stun guns modified to reduced voltage (20 to 25 kV) had been sold in the United States for treatment of snakebite.<sup>19</sup> Due to the lack of research support, the Food and Drug Administration (FDA) on April 9, 1990 banned the use of devices that deliver electric shocks for treatment of human beings or animals with snakebite and other envenomations.<sup>18</sup> However, it was perhaps inevitable that the use of the stun gun would be extended to therapy of skin lesions caused by the ubiquitous Midwestern arachnid, the brown recluse spider (*Loxosceles reclusa*). Two reports in the Oklahoma State Medical Association

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### ***Well-designed animal studies have not substantiated a beneficial effect of stun gun shock therapy...***

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JOURNAL present a series of 147 patients presumably envenomated by the brown recluse spider and shocked with a stun gun (25 kV for 2 sec or 50 kV for 1 sec and less than 4.5 mA for six or more shocks). The majority of patients improved after shock therapy, but no control group of patients was used.<sup>20,21</sup> In our laboratory, guinea pigs were injected with brown recluse spider venom to induce characteristic early skin lesions. The guinea pigs were divided into four groups: Dapsone therapy (0.7 mg/kg PO bid), Guardian stun gun shock therapy, Parali/azer stun gun shock therapy, and control. The Dapsone-treated group healed fastest, the Guardian stun gun group healed at the same rate as the controls, and the Parali/azer group healed more slowly than the controls due to skin burns from the stun gun shocks.<sup>22</sup>

Anecdotal reports and uncontrolled treatment trials cannot generally prove a therapeutic benefit of a new drug or device. Well-designed animal studies have not substantiated a beneficial effect of stun gun shock therapy for patients with venomous snakebites or spider bites. The stun gun was developed as a weapon and is likely not the ideal device for delivery of electrotherapy. Indeed, "Benjamin Franklin was



disappointed in the remedial effect of his shocks (from Leyden jars) in the main".<sup>1</sup>

We have reconstructed a diagnostic test for brown recluse spider bite envenomation. This test had a 90% sensitivity and 100% specificity in guinea pig skin lesions.<sup>23</sup> We are now using a positive test in patients as an entry criterion into a prospective randomized double-blind Dapsone vs placebo treatment trial of necrotic arachnidism due to the brown recluse spider. The great majority of our patients with small or large necrotic skin lesions are slowly healing well with good wound care (soap and water and hydrogen peroxide cleansing twice daily), frequent cold compresses, and either Dapsone or placebo. We are not using antibiotics, steroids, excisional therapy, or electrotherapy. It is quite possible that we physicians have been too aggressive with the therapy of localized necrotic arachnidism over the years. We should wait for the results of more properly designed research trials before adopting electrotherapy as a therapeutic option for patients with venom-induced skin or soft tissue wounds.



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## State Health Care Reform: A Response to Weil's Commentary, "Oklahoma's Future Health Care Strategy"

David Falcone, PhD

Thomas Weil was kind enough to provide me an advance copy of his "Commentary" that appeared in the September 1992 issue of this journal. This is a commentary on the "Commentary" that takes issue with some of Weil's arguments without necessarily contending his overall conclusion.

His diagnoses of Oklahoma's share of national health care problems—recruiting primary care physicians to rural areas, controlling health care costs, extending child and maternal health services, providing continuous insurance coverage without discrimination on the basis of preexisting conditions, declining hospital censuses, and uncompensated care—are generally as definitive as one could expect of an overview. Nor could one expect from such a commentary anything more than a cautious general approach to reform strategies.

In proposing such an approach, Weil is unabashedly in favor of an incremental strategy. He observes that if one wants to purchase models for reform, Canada and Germany are logical places to shop: both are federal systems with health programs that have improved access at bearable cost. Weil notes that the German model may be more attractive to Americans in that it combines public and private financing, an argument that Uwe Rheinhardt often makes, and the German program has not been the subject of as much criticism as has Canada's (perhaps because the guardians of the status quo have not yet felt as threatened by the possibility of a German import).

In using the comparative method, as is becoming more and more fashionable, Weil is guilty of venial, understandable, and therefore, easily pardonable sins of commission and omission. The sins of commission are: (1) his implication that a monopsonistic (single payer) source of funding is a necessary condition for cost control and (2) his subscription to the notion that American ideological exceptionalism—pluralism, individualism, competitiveness—precludes importation of foreign methods of financing and organizing health services delivery. Weil's sin of omission is his insufficient recognition of significant reform activity taking place in states, most visibly in Massachusetts, Minnesota, Vermont, Hawaii, and Florida, but stirring in other places as well, in the form of "players only" (Hawaii), "pay-or-play," or single-payer schemes.

### Monopsony and the "Concentration of Interest" Hypothesis

The "concentration of interest" hypothesis has been so seldom challenged in health policy discussions that it almost has the status of an assumption (I plead guilty to having subscribed to it uncritically in writings on Canada). This hypothesis has been invoked to argue that a consolidated, monopsonistic budget is a necessary or sufficient condition for effective health care cost containment. With some oversimplification, the hypothesis can be stated briefly as follows: If the effects of a program's costs are concentrated and the effects of its benefits are diffuse, then the pain of the costs will be more acutely felt by major political actors

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than the pleasure of the benefits. If a program's benefits are concentrated, as they are on providers under fee-for-service reimbursement, and the program's costs are diffuse, say among governments and private insurers, there will be a more intense political force for benefits expansion than for curtail-ing costs.

Regarding national health care systems, the extreme case of cost concentration is the British National Health Service wherein the overwhelming majority of the direct costs of providing care (ie, excluding opportunity costs such as the lack of productivity incurred because of queues for elective surgery) are the responsibility of the national government. In each budget cycle, health programs compete for limited public funding with other categories of expenditure such as education, highways, and defense. The benefits, however, basic health services with no fee at the point of service delivery, are spread across a large unorganized population. Providers do not directly benefit from demand; in fact, they lose in terms of time and effort expended, since general practitioners are paid on the basis of the numbers of

ing power parities, either as percent of gross domestic product or per capita, are highest in the US and lowest in the UK, with Canada in between and closer to the United States.<sup>1</sup>

The concentration of interest hypothesis seems to make sense, not only in cross national perspective, but also in examining trends in US health policy. The most imposing budget restraining efforts have been exercised by Medicare. That program's costs are concentrated in the Health Care Financing Administration and a small (albeit rapidly growing) number of older adults. Medicare has applied prospective capitated budgeting to hospital expenditures and soon will extend the method to physician reimbursement. Attempts to expand benefits, eg, via "catastrophic" coverage, were daunted by the bearers of the attendant costs, older Americans, once this relatively narrow and politically powerful group became aware of the price tag.

However, as is the case with many intuitively appealing hypotheses based on examples, the concentration of interest hypothesis is flawed. For one thing, the cost experience of prepaid plans is not consonant with the hypothesis.<sup>2</sup> Of course, this may be because in most plans providers are not at risk financially. But the hypothesis also fails where it started, in the international arena. For but two examples of many that could be cited, Germany and Japan have comparatively low health care expenditure levels—Japan's is the lowest among Organization for Economic Cooperation and Development member nations—and they have multiple sources of funding. Japan also has fee-for-service medicine, unsafe lifestyles, very highly paid physicians, most of whom are specialists, and very high physician and hospital utilization rates. Further, returning closer to home, despite the fact that Canada has consolidated budgets, it is second only to the US in health care spending, even if it still is far behind.

In short, monopsony is neither a necessary nor a sufficient condition for cost containment. The concentration of interest hypothesis is not entirely incorrect, it is simply too confined: it ignores other causes of medical care relative price inflation such as inefficient allocation of resources. The hypothesis also fails to take account of the fact that vigorous sustained regulation can contain costs, as illustrated by the German experience.

Should we move toward consolidated budgets? Probably. Will this alone solve our financing problems? Of course not. Are there other means of containing costs? Let us hope so. Perhaps these means

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### ***Monopsony is neither a necessary nor a sufficient condition for cost containment.***

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patients in their "panels," rather than per service, and specialists ("consultants") are salaried. Of course, there is a growing, but still small, fee-for-service reimbursed sphere of private practice.

On the other hand, in the United States, where there are multiple sources of funding (implicitly, what Weil refers to as "pluralism"), the impact of costs is spread among payers, while the predominantly fee-for-service reimbursed providers derive large marginal benefits from each unit of utilization. Between the UK and the US is the Canadian financing mechanism. In Canada, fee-for-service reimbursement prevails and, therefore, the marginal benefit to providers and consumers of utilization of any and all services resembles that of the US system. But, in each Canadian province, virtually all the marginal costs are incurred by a central source: the treasury. Most empirical analyses of the concentration of interest hypothesis have examined the above continuum and, as is well known by now, health care costs in the countries mentioned, measured in terms of purchas-



will be found in state health policy experiments. I will take these up after commenting on Weil's second sin of commission.

### **American Exceptionalism: Individualism and Competitiveness**

It is commonplace in health policy commentary to admire other nations' accomplishments with universal health insurance coverage and to lament that such accomplishments could not be replicated in the US because of our classic liberal political culture with its emphasis on individualism and competition, and its antipathy for government action in the social sphere. This attitude reflects a romanticism not supported by empirical evidence.<sup>3</sup> And the romantic depiction is not very flattering, as it characterizes us as economically irresponsible: it assumes that we are willing to sacrifice the prerequisites of productivity, a healthy and, thus, educable and trainable population, on the altar of ideology. That irresponsibility is no longer an affordable luxury, if it ever was one.

We do not have to take such an unflattering view of ourselves. If, in fact, we were unwilling to forego individual rights in the public interest, we would not allow government to force us to wear seat belts, spend money on catalytic converters, impose speed limits at least as low as most other countries, or deny us access to drugs until they have been proven safe and effective, long after they have been deemed acceptable elsewhere. We would not have what is arguably the most heavily regulated health system on earth, albeit the regulation does not typically achieve intended outcomes. Admittedly, the system is not publicly directed, as is Canada's or Germany's, by a lot of government mandated "do's"; but it has an almost incomprehensible array of "don'ts." Being a former football player (certainly not of Sooner quality), I find it natural to think of the American health care policy game in terms of an athletic metaphor: the playbook is limited, the referees are many, and the risk is always high of breaking rules too numerous to be memorized. If the metaphor is at all apt, it is not one that describes a game that emphasizes the relatively unrestrained expression of individualism and *true* competition.

There is an even more fundamental flaw in the American exceptionalism argument: it rests on an assumption of cultural determinism, ie, if a policy transplant comes from an alien culture, the American system will reject it, so why try the procedure. The exceptionalism and cultural determinism lore is so embedded in our mythology that it can be a self-

fulfilling prophecy. As mentioned, it is questionable whether American political culture is as exceptional as Weil contends. But even *if* his description were accurate, must American distinctiveness rule out the importation of foreign ideas? No, if it did, we would still be in the pre-Flexnerian era, exercising our competitive individualism and rejection of government authority by receiving medical care from physicians trained at barber colleges. Nor would we have insurance, social or medical. In a slightly less parochial perspective, if cultural determinism were valid, Japan would not have modeled its system after Germany's. In short, political cultures may be identifiably different; that does not preclude international lesson-learning. However, let us at least concede that political culture does help shape health system structures and processes. There still is enough variance in political cultures within the US to admit of varying degrees of political reform.

### **US Health Policy: Innovations from the States**

I have borrowed the title of this section from a recently published book edited by Howard Leichter.<sup>4</sup> The book is part of a growing literature, scholarly and popular, on what states can do without the help, even sometimes despite the interference, of the federal

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***A health care program  
"tailored" to the needs of  
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may simply be unmanageable.***

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government. Over the next year, regardless of the rhetoric of the Bush and Clinton campaigns, one can safely predict that we will see more and more innovations in state health policy. There are several reasons why this is to be expected and, perhaps, applauded:

1. A health care program "tailored" to the needs of 260 million people may simply be unmanageable. Vincent Ostrum argued this point some years ago based on Nobelist A. Coase's classic on the optimal size of the firm (*The Nature of the Firm*, 1937). Ostrum noted that, whereas in the private sector the optimum is constrained by the profit motive, governments are not so constrained and so can grow inexorably. But if one construes cost reductions in the public sector as profits, then, in our present era of

limited resources, governments do have a profit incentive to reduce their size. National governments are acting on this incentive as decentralization, or devolution, is occurring around the world. In Canada, for example, health care reform, which started in the provinces, is returning to the provinces, particularly in the increasingly crucial area of long term care. Britain is emphasizing regional responsibilities for access to hospital services and is giving general practitioners more opportunities for local entrepreneurship. The American Hospital Association's newly refined program deserves consideration since it recognizes the importance of adapting health services configurations to community differences.

2. Related to 1, there is a growing awareness that the fragmentation of health services organization and financing mirrors the disintegration of national political institutions. The *New York Times* bestseller list contains books that analyze this disintegration that formerly would have been read almost exclusively by political scientists and historians. That august newspaper also reviewed James Marone's *The Democratic Wish*,<sup>5</sup> which persuasively argues that health policy reform requires political reform and that the latter is unlikely. In former times, the inherently disintegrative forces in a political system initially structured to make deadlock easier than decision were mitigated by the informal rewards and sanctions available to party leaders. But, as columnist David Broder waggishly put it a few years ago, *The Party's Over*. In sum, although national recognition of the problems of access and cost control is perhaps at an all time high, national action is improbable.

3. While the process in 2 has been taking place, states have institutionalized and professionalized their political systems. Legislatures meet regularly and have committee structures and professional staffs, and state bureaucracies have become merit civil services. A major argument for federal encroachment on constitutionally designated state areas of responsibility, such as health, once was that the states did not have the administrative capability to handle the responsibility. That argument has lost its force.

4. Trite as it may be to say, states are, in fact,

closer to the people. (In public finance terms, the choice of residence in a state allows one to optimize his/her preferred consumption of private and collective goods.) The socioeconomic heterogeneity of the US and the accompanying variance in political cultures is less pronounced at the state level. Insofar as political culture does affect public decisions, the fit between public opinion and public policy can be closer at the state level.

5. States can learn from one another's experiments. Pragmatists traditionally have touted this as one of the advantages of vigorous federalism. And lesson-learning is expedited by the increased vitality of intergovernmental organizations such as the National Governors Association, the National Association of County Organizations, the Advisory Council on Intergovernmental Relations, and the Association of State and Territorial Health Officials.

## Concluding Comments

From what has been said, Weil's advice about incrementalism may be justified. Why not wait and see what is happening in other states? For reasons I have mentioned, this view need not be limited to the United States. On the other hand, the question must be asked as to whether the current problems Weil observes are not so pressing as to make more immediate action necessary. And, Weil presents indicators that Oklahoma's problems are unusually severe. ¶

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## The Author

David Falcone became professor and chairman of the Department of Health Policy and Administration in the College of Public Health of the University of Oklahoma Health Sciences Center on August 1, 1992. Formerly he was associate professor of Health Administration at Duke University and associate program director of the Long Term Care Resources Program in the Duke Center for the Study of Aging. His primary research interests are international health systems, long term care, and comparative state health policy.

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From the AMA-HMSS

## AMA communiqué addresses legal issues for hospital medical staffs

The following summaries are from the August 27, 1992, Legal Update distributed by the Office of the General Counsel for the American Medical Association. Readers may direct their questions to and obtain additional related information from William O. Coleman, MD, chairman of the Oklahoma State Medical Association Hospital Medical Staff Section, (405) 946-0727:

**When is disruptive physician behavior grounds for disciplinary action?** The issue of disruptive physician behavior has been receiving great attention in recent months. Medical staffs around the country are being presented with proposed bylaws amendments or "hospital policies" that address how to deal with disruptive behavior. Disruptive physician behavior is an issue that *medical staffs should address through peer review and the medical staff bylaws*. A memorandum identifies the legal prin-

ciples that should guide medical staffs as they deal with this important issue.

**American Hospital Association (AHA) promises to revise health reform plan to protect physician autonomy.** In response to the AMA House of Delegates' rejection of the AHA's health system reform plan, AHA President Richard Davidson announced at the AHA's annual meeting that the AHA will revise its plan to protect the economic and clinical autonomy of physicians. Mr. Davidson did not specify the nature of the revision or the degree of protection.

### Economic credentialing watch:

• **Loyola Institute for Health Law conducting broad hospital survey on economic credentialing.** Chicago's Loyola Institute for Health Law is conducting an extensive hospital survey about medical staff credentialing. The survey addresses many aspects of medical staff appointment and reappointment, but focuses on the use of economic criteria, according to John Blum, director of the Health Law Institute. The survey also asks hospitals to identify new credentialing criteria, and to project future changes in credentialing. The survey was mailed to all US hospitals and, due to a tremendous response rate, resulted in a sample of approximately 3000 hospitals. The institute has recently begun analyzing the data.

• **Medical staff and hospital disagree over medical staff bylaws amendments that would authorize economic credentialing.** The medical staff at Huron Regional Medical Center in South Dakota is in a dispute with its hospital over proposed medical staff bylaws amendments that would authorize economic credentialing. The hospital cites its obligation to maintain a financially viable institution and denies that the amendments would impose economic credentialing. The hospital CEO has requested that the medical staff approve the proposed bylaws by

## OSMA executive earns highest professional achievement title



Lyle R. Kelsey

Lyle R. Kelsey, associate director of the Oklahoma State Medical Association, has been named a Certified Association Executive (CAE) by the American Society of Association Executives (ASAE).

The CAE is the highest professional achievement designation available from the society. ASAE has more than 20,000 members representing local, state, regional, and national trade and professional associations. The CAE designation is held by only 2,000 people.

OSMA General Counsel Ed Kelsay also holds the CAE designation and is an American Society of Association Executives Fellow. □

September. If the staff fails to comply, the hospital's attorney believes that a court would uphold a unilateral amendment of the bylaws by the hospital.

• ***Rosenblum vs Tallahassee Memorial Regional Medical Center.*** As reported in the June 1992 Legal Update, a Florida trial court in *Rosenblum vs Tallahassee Memorial Regional Medical Center* recently upheld a hospital's right to deny clinical privileges for purely economic reasons. *Rosenblum*, the first legal challenge to economic credentialing, involved a highly qualified surgeon who applied for cardiac and thoracic surgery privileges at Tallahassee Memorial Regional Medical Center (TMRMC). The hospital board granted thoracic privileges but denied cardiac privileges because Dr. Rosenblum had a written contract to develop an open heart surgery program for Tallahassee Community Hospital (TCH), the only other hospital in town.

The court upheld the hospital's decision on the basis of a Florida statute that allowed hospitals to grant privileges on the basis of qualifications, training, health status and "such other elements as may be determined by the governing board." "Such other

elements," the court concluded, "validly embraces the concept of what is called economic credentialing."

Once it determined that the statute authorized economic credentialing, the court turned to the two remaining inquiries—whether there were valid economic considerations for the conduct and whether the economic credentialing was arbitrarily imposed. Because Dr. Rosenblum had a written contract with TCH, the court concluded that both tests were met. That is, the contract was a valid economic consideration and because of the "intense" competition between the hospitals, it was not arbitrary for TMRMC to deny privileges on the basis of that contract.

After the court decision, Dr. Rosenblum reapplied for cardiac surgery privileges at TMRMC. Dr. Rosenblum was—and still is—the director of TCH's open heart surgery program, but his written contract with TCH had expired during the litigation with TMRMC. *Surprisingly, TMRMC in August, 1992, granted Dr. Rosenblum cardiac surgery privileges.* Although TMRMC has offered no explanation for its change of heart, the likely reason is that the written contract with TCH was the pivotal factor in the

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## OSMA field office hosts joint open house with TCMS and PLICO



**A jointly sponsored open house** on September 2 marked a fresh beginning for several Tulsa organizations. Newly refurbished office space will house the field office of the Oklahoma State Medical Association, the headquarters of the Tulsa County Medical Society, and the Tulsa office of C.L. Frates and Company, representative of the Physicians Liability Insurance Company



(PLICO). Among those attending the festivities were (above left) OSMA President James D. Funnell, MD; Dewitt Vann, eastern Oklahoma PLICO/C.L. Frates representative; and OSMA Associate Director Robert W. Baker III; and (above right) TCMS Associate Director Tanya Luce and OSMA Chairman of the Board Jay A. Gregory, MD.

court's decision. Without the contract, the *Rosenblum* decision provides no basis for TMRMC to impose economic credentialing.

• **AHA evaluating need to study economic credentialing.** The American Hospital Association Board of Trustees will soon be deciding whether to establish an ad hoc committee to address economic credentialing. To assist its board, the AHA has requested policy and related information on economic credentialing from the AMA and other organizations. The AHA shuns use of the term "economic credentialing," and suggests "practitioner resource utilization data."

**Litigation update: Jury verdict of \$87,000 rendered in Alfredson case.** Nearly one and one-half years after the Tennessee Supreme Court ruled in *Lewisburg Community Hospital v. Alfredson*, 805 S.W.2d 756 (Tenn. 1991), that the hospital breached the medical staff bylaws by not providing Dr. Alfredson a hearing prior to removing his privileges, a jury awarded Dr. Alfredson \$87,000 in damages. Dr. Alfredson had been the sole radiologist at Lewisburg when the hospital granted an exclusive contract to another radiologist and refused to allow Dr. Alfredson access to the radiology equipment or personnel. The hospital maintained it had not reduced Dr. Alfredson's privileges so no fair hearing was required. The Tennessee Supreme Court rejected that argument, hold-

ing that the medical staff bylaws are a contract and that the hospital breached that contract by reducing Dr. Alfredson's privileges without a fair hearing.

When the case was sent back to the trial court, the hospital argued that the findings of a court in an unrelated bankruptcy proceeding involving the hospital's parent corporation prevented Dr. Alfredson from recovering damages. The AMA and American College of Radiology (ACR) urged the court to reject the hospital's effort to avoid its liability. The court agreed with the AMA and ACR, and the damages trial began. In August, 1992, the jury awarded Dr. Alfredson \$87,000.

**Physician negotiations in health system reform.** The fifth in a series of memoranda discussing the role of physicians in health system reform has been released. This memorandum, prepared by Edward Hirshfeld, AMA assistant general counsel, discusses the physician negotiation provisions of Vermont's health reform law and the activities that Vermont State Medical Society has undertaken in response to the new law.

*Note: These analyses do not constitute legal advice and should not be substituted for the advice of an attorney representing the individual physician and/or medical staff.*

—William O. Coleman, MD  
Chairman, OSMA-HMSS



## IN MEMORIAM

### 1991

Jack Owen Alexander, MD	October 21
Roy Oliver Kelly, Jr., MD	October 22
Lowell Francis Thornton, MD	October 22
Lillian Marie Hoke, MD	October 25
Irwin Hubert Brown, MD	October 27
Harold Houston Jones, Jr., MD	October 27
Francis Ray First, Jr., MD	October 28
Robert W. Kahn, MD	October 30
Charles Hugh Wilson, MD	October 30
George Kellogg Stephens, MD	November 4
Edward M. Farris, MD	November 22
Weldon Keiller Haynie, MD	November 25
Samuel Richard Fryer, MD	November 30
William Thomas Snoddy, MD	December 3
Philip George Joseph, MD	December 20
Charles Patrick Kirkland, MD	December 24

### 1992

John Moore Campbell III, MD	January 24
Bruce Ratliff Hinson, MD	January 24
Louis Carroll Taylor, MD	February 3
Earl Russell Muntz, MD	February 4
Claude Marion Bloss, Jr., MD	February 24
Oliver James Hagg, MD	March 31
Francis Patrick Cawley, MD	April 17
Don Horatio O'Donoghue, MD	April 20
Billie Gene Henley, MD	April 24
Arlo Kenneth Cox, MD	April 27
Charles Victor Williams II, MD	May 1
Benjamin Joe Myers, MD	May 13
Robert Victor Bolene, MD	May 18
William Anders Crockett, MD	May 30
Charles Jackson Young, MD	May 31
Robert R. Dugan, MD	June 18
Ransom Francis Ringrose, MD	June 18
John L. Plewes, MD	June 21
David Lloyd Edwards, Sr., MD	June 23
Harlan Thomas, MD	June 30
Mark Donald Vanderslice, MD	July 13
William Branch Renfrow, MD	July 21
Jared Leigh Bryngelson, MD	August 14
Jo Ann Haynes, MD	August 14
Jack Allen Harder, MD	August 19
Kenneth Lee Peacher, MD	September 20
Antone Cosmo Fina, MD	September 25
Joseph Reid Henke, MD	September 28
Charles Morris Gunn, MD	October 10

## OUHSC professor trains Russian physicians to use laparoscope



Dr. Fishburne

With a little help from an Oklahoma City expert, nine physicians in the former Soviet Union spent two weeks recently learning to perform sterilization operations using the laparoscope.

Their teacher was John I. Fishburne, Jr., MD, chair of the Department of Obstetrics and Gynecology at the University of Oklahoma Health Sciences Center in

Oklahoma City. Dr. Fishburne's visit was sponsored by the Zhordania Institute for Human Reproduction in the Republic of Georgia and by the Association for Voluntary Surgical Contraception, a New York – based foundation.

Dr. Fishburne taught a procedure popularly known in the US as "tube tying," closing Fallopian tubes to prevent conception.

"There is a desperate need for this type of procedure throughout the former Soviet Union right now," Dr. Fishburne explained. "Contraceptive methods are not very accessible in Georgia, so the primary means of contraception is abortion. In fact, I performed laparoscopic sterilization on two women who had had 25 abortions each. Even the average woman has had around eight. Our hope is that by teaching this sterilization technique, we can reduce the reliance on abortion as a method of birth control."

Dr. Fishburne trained nine Zhordania Institute physicians not only to perform the procedure, but also to teach other physicians the process. He returns for a follow-up visit this month to check their progress. Along with Dr. Fishburne, the institute physicians received instruction in another sterilization procedure, minilaparotomy, from Dr. Allen Margolis, of the University of California–San Francisco.

In addition to his own expertise, Dr. Fishburne delivered nearly \$50,000 worth of corporate-donated medical instruments, equipment, and antibiotics. He was selected for the trip by the Association for Voluntary Surgical Contraception, for which he has done consulting work around the world.

Describing his experience with the Georgian people, Dr. Fishburne said, "They were the warmest, friendliest people I've met. We talk about 'Southern hospitality' in this country—it was like that, only more so."

Oklahoma State Department of Health

## OSDH summarizes immunization indications and contraindications



The Immunization Program of the Oklahoma State Department of Health has received numerous questions from physicians regarding current vaccine indications and contraindications in

specific situations. The following is a quick summary of the most commonly asked questions, especially those concerning these recent changes.

- If a child is ill with a fever of 100°F or higher and/or appears very sick, immunizations should be deferred; mild colds are not a contraindication.

- Diphtheria, tetanus, and pertussis vaccine (DTP) is contraindicated only after a child has suffered either an anaphylactic reaction or encephalopathy within seven days of a previous DTP vaccination; in these cases, pediatric diphtheria and tetanus (Ped. DT) should be used for subsequent doses.

- DTP has not been shown to be associated with permanent sequelae after any of the following: convulsions with or without a fever within three days, inconsolable crying for three or more hours occurring within 48 hours, and hypotonic or hyporesponsive episode or collapse within 48 hours. Therefore, these are no longer contraindications, but are now precautions. That means that the vaccine of choice is Ped. DT, but if a pertussis outbreak is occurring, DTP should be used.

- If a child has an evolving neurologic disorder (changing neurologic findings with or without a diagnosis: for example, uncontrolled epilepsy, recent seizures, or progressive encephalopathy), DTP immunizations should be deferred until the condition has been diagnosed or stabilized.

- A family history of convulsions, allergies, SIDS, or adverse event following DTP is not a contraindication, or even a precaution, to the use of DTP.

- Partial doses of DTP should not be administered. If a vaccine is to be administered, the full correct dose should be used.

- Previous anaphylactic allergies and their contraindicated vaccines:

- Eggs: measles, mumps, rubella (MMR) or influenza vaccine

- Neomycin: MMR vaccine

- Streptomycin: oral polio vaccine (OPV)

- Thimerosal: DTP, tetanus-diphtheria (Td), HbCV (Hib), influenza, or hepatitis B

- If a patient is immunosuppressed or immuno-

deficient, live vaccines (such as MMR and OPV) should not be administered (except that HIV-positive children should get MMR). If a household contact to a patient is immunosuppressed or immunodeficient, OPV should not be administered.

- Td or hepatitis B vaccines should not be delayed due to pregnancy or lactation if the woman is at risk.

- Polio vaccine is not recommended for anyone 18 years of age or older except those in high risk situations, such as laboratory workers and international travelers.

- Hib vaccine is recommended only for children less than 5 years of age. Children 5 years of age and older are considered to already be immune.

Physicians who have questions concerning contraindications to immunizations can contact the Communicable Diseases Division at 405/271-4073. ☐

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## How Things Have Changed

Having recently completed our new home, we developed a clogged sewer at about 10:00 PM. The builder responded promptly. However, we were unable to unclog the sewer.

A call was placed to Roto-Rooter. I was immediately informed the call to my home would be a minimum of \$78.50/hr portal-to-portal nighttime rate. When I inquired what the daytime rate would be, I was told \$52.50. Since an adequate sewer system in my home rates with the refrigerator in priority rank, I asked them for the nighttime repair.

When I answered the door, the workman greeted me with, "I bet you don't remember me, do you?" I replied that I was, for the moment at least, at a loss for recognition.

He stated that I had been the physician that attended his mother during her pregnancy and delivered him 33 years ago. After exchanging niceties, we proceeded to work on the clogged sewer. After approximately 10 minutes, he removed what appeared to be a painter's rag.

I asked him for the amount. He replied, "\$78.50." While I was writing the check, I could not help thinking how things have changed.

I informed him that 33 years ago, I attended his mother during approximately 9 months of pregnancy,



delivered him, attended her and him in the hospital for 4 to 5 days (not unusual in those days) and attended her and him for the 6 weeks check-up, and my fee in those days was \$75.00.

He replied, "I got even with you, didn't I"?

I handed him the check for \$78.50.

—*M. Joe Crosthwait, MD*  
*Oklahoma City*

P.S. I hope he is not getting even with me for the circumcision. □

## DEATHS

### Jared Leigh Bryngelson, MD 1920 - 1992

OSMA Life Member Jared L. Bryngelson, MD, died August 14, 1992. Born in Beemer, Neb, Dr. Bryngelson earned his medical degree from the University of Nebraska College of Medicine in 1945. During World War II he served with the US Navy in the South Pacific. After completing his postgraduate work, Dr. Bryngelson moved to Bartlesville, where he practiced orthopedic surgery from 1957 to 1991.

### Antone Cosmo Fina, MD 1921 - 1992

Antone C. Fina, MD, who practiced medicine in Atoka for 38 years before his retirement, died September 25, 1992, in Plano, Texas. Born in Caccamo, Italy, Dr. Fina earned a bachelor's degree at Northwestern University, served in the US Army Medical Reserves during World War II, and earned his medical degree at Northwestern University Medical School in 1947. He set up a general practice in Duncan in 1948, and in 1949 moved to Atoka to reopen the Cotton Clinic. An OSMA Life Member, Dr. Fina retired in 1987.

### Charles Morris Gunn, MD 1930 - 1992

Oklahoma City physician Charles M. Gunn, MD, died October 10, 1992. The Buffalo, Texas, native was graduated from the University of Oklahoma School of

Medicine in 1968. After his completing his internship, Dr. Gunn established a general practice in Mangum. He moved his practice to Oklahoma City one year later.

### Jo Ann Haynes, MD 1938 - 1992

Norman psychiatrist Jo Ann Haynes, MD, died August 14, 1992. Dr. Haynes was born in San Antonio and received her medical degree from the University of Texas Medical Branch, Galveston, in 1967. She completed her internship in Little Rock before moving to Norman, and was licensed to practice medicine in Oklahoma in 1969.

### Joseph Reid Henke, MD 1911 - 1992

Joseph R. Henke, MD, OSMA Life Member since 1982, died September 28, 1992. A resident of Guthrie, Dr. Henke had practiced ophthalmology in that community for many years. He earned his medical degree from the University of Oklahoma School of Medicine in 1937 and took over his father's practice in Hydro, his hometown, the following year. He accepted a commission in the US Marine Corps but was given a medical discharge in 1942 and returned to Hydro. Dr. Henke moved to Guthrie in 1957.

### Kenneth Lee Peacher, MD 1924 - 1992

Kenneth L. Peacher, MD, of El Reno, died September 20, 1992. A native of El Reno, Dr. Peacher was born there in 1924. In 1948 he was graduated from the University of Oklahoma School of Medicine. He had a family practice in Waynoka from 1949 to 1960, when he returned to his hometown. He retired in March 1992. Dr. Peacher was a captain in the US Air Force during World War II and the Korean conflict. □

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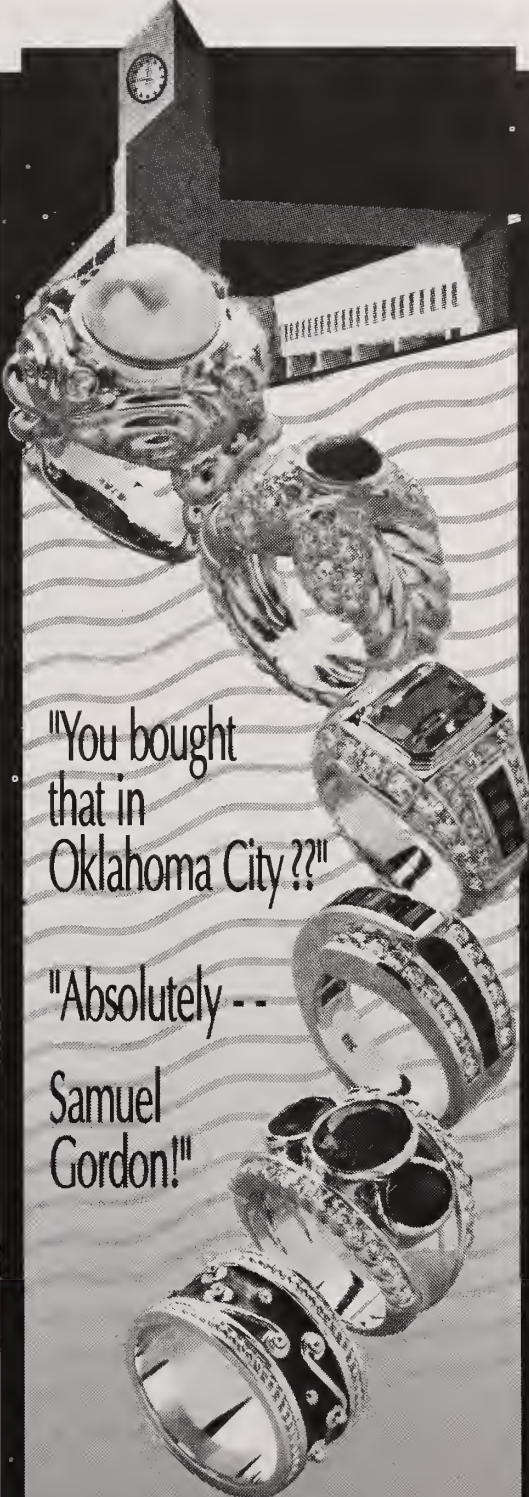
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(Continued on page 549)

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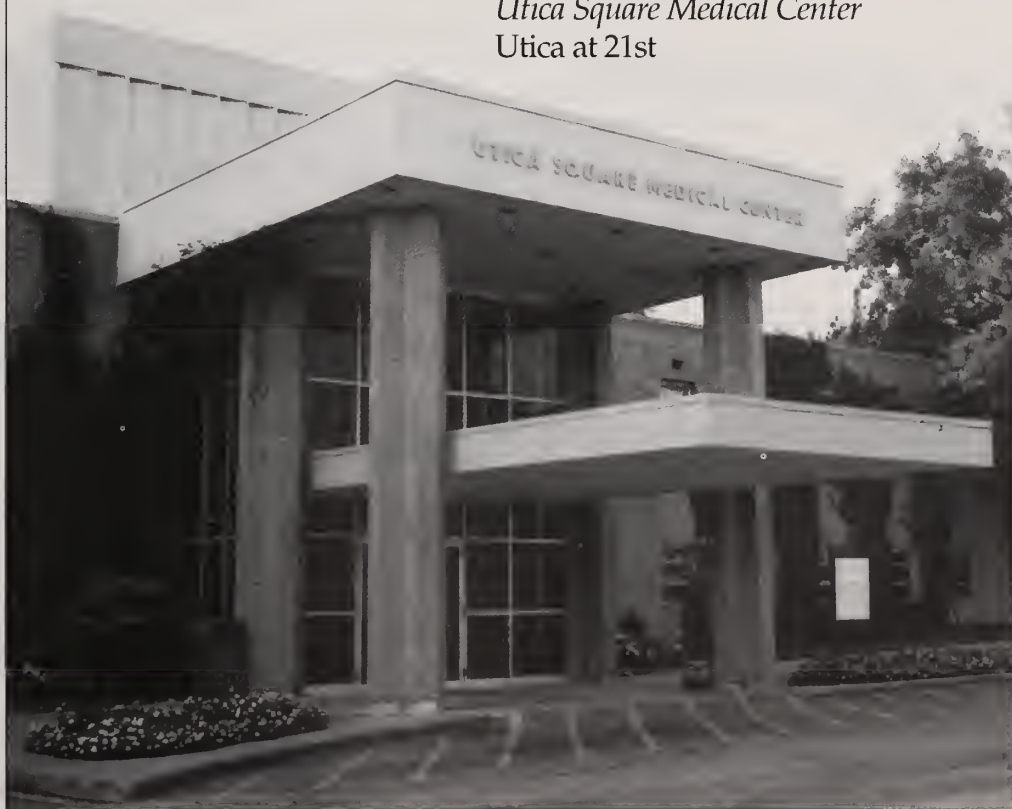
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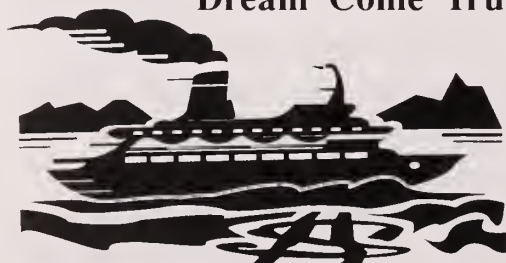
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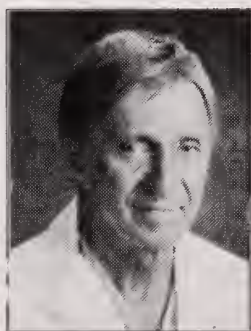
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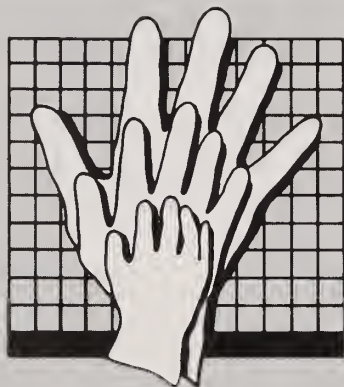
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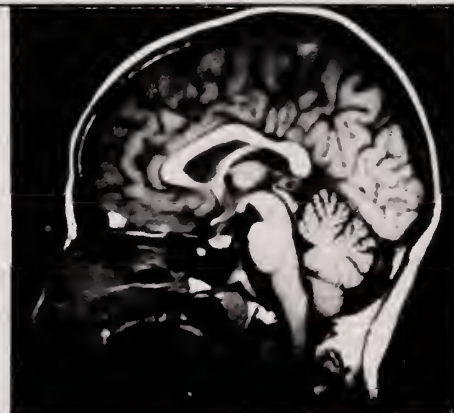


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## Legislative Agenda

This fall the OSMA Auxiliary held a legislative workshop and set forth its priorities for the coming year 92-93:

1. The "New Living Will" is a top priority, and our major project for the year will be to educate the public as well as our own members on this new law.

2. To establish a phone tree.

Last May the state legislature enacted a "New Living will." A coalition of many professionals acting with the legislature repealed the old law and enacted the "Advance Health Care Directive" which became law September 1, 1992. However, there has been some confusion concerning this important new law. We feel that as auxiliaries we can work to clarify the new law by adopting this project throughout the state. Each county auxiliary will soon be receiving important materials and a press release explaining the new statute. Each county auxiliary will distrib-

ute this information to organizations throughout the community. Some counties may hold seminars on the Living Will.

It was decided that each county would establish a phone tree. The purpose of the phone tree is to communicate valuable legislative information to *key people* in each county. They will then contact their legislator or key members of the House or Senate. Each county leader will follow the basic guidelines for a phone tree, emphasizing communication with its members in case of an alert. Transmitting information promptly is vital to making this plan work.

Regardless of the outcome of the November election, I feel that interest, enthusiasm, and involvement in the legislative process is greater than ever before!

—Judy Miller  
State Legislative Chairperson

■ **The Board of Trustees of the Oklahoma State Medical Association (OSMA)** is now accepting nominations for both the 1993 Donald J. Blair Friend of Medicine Award and the Wyeth-Ayerst Physician Award for Community Service. The Blair award recognizes a lay person who has rendered outstanding service and support to the medical profession, and the Community Service award recognizes a physician for contributions to his or her community.

Nominations should be directed to the Board of Trustees or OSMA executive offices, 601 Northwest Expressway, Oklahoma City, OK 73118. Winners will be selected at the board's meeting in February and announced at the Annual Meeting of the OSMA House of Delegates in April.

■ **Robert M. Shepard, Jr., MD**, has been honored by the Tulsa County Medical Society with one of its 1992 Community Service Awards. Dr. Shepard, a retired surgeon, was given the Health Professional Award. He served as president of TCMS in 1972. Nominations for the award were submitted by TCMS members.

■ **The October issue of *Tulsa Medicine*** noted the following physicians have donated their time and services at the Broken Arrow Neighbors free clinic: Everett R. Dunlap, MD; William R. Mast, MD; and Keith A. Jesiolowski, MD.

■ **Michael Pollay, MD**, professor of neurosurgery at the University of Oklahoma Health Sciences Center in Oklahoma City, is one of only two people worldwide to receive the prestigious Pudenz Award for Excellence in CSF (cerebrospinal fluid) Physiology this year. Chief of the OUHSC Neurosurgery Division, Dr. Pollay received the award at a special presentation in August. The award is named after Robert H. Pudenz, world-acclaimed neurosurgeon, who personally selects each year's winners.

■ **The Tulsa County Medical Society** reports it has begun a mini-internship program to acquaint business leaders with the day-to-day activities of physicians. Leaders from the areas of business, education, media, and government will spend a half-day

each with a physician, observing his or her interaction with both office and hospital patients. The program is endorsed by the American Medical Association and has been implemented by several county medical societies across the country.

■ **The International Conference on Physician Health** will be held January 28–31, 1993, at the Marriott Mountain Shadows Resort in Scottsdale, Arizona. The conference is sponsored jointly by the American Medical Association, the Canadian Medical Association, the Federation of State Medical Boards, and the Federation of Medical Licensing Authorities of Canada. It will provide an opportunity to learn about the latest research findings on physician health, as well as new and innovative treatment and education programs in the area. To qualify for an "early bird" registration rate, physicians must register before December 11. For details on the conference or registration, write to International Conference on Physician Health, American Medical Association, 515 North State Street, Chicago, IL 60610, or call 1-800-262-3211.

■ **The promotion and sale of unapproved drug products** by off-shore and overseas mail-order houses raise several serious health questions, the AMA has warned. In discussions with the FDA, the AMA has expressed concern about mail order houses that advertise US-patented drugs in popular magazines. Readers are able to order the drugs by toll-free telephone, often at greatly reduced prices and apparently without prescription. Promotion and distribution of unapproved drug products in the country is illegal, the AMA noted, citing concerns about quality, self-prescribing, and lack of medical supervision that could adversely affect the patient. "The quality of so-called 'foreign versions' of prescription drugs is often unknown," the AMA said. "In some cases the drugs are counterfeits. Directions for appropriate use of the product may be inadequate. Finally, the ease with which these unapproved and sometimes potent mail-order drugs can be obtained—frequently without a doctor's prescription—raises serious concerns about self-medication." The AMA has issued an advisory to physicians nationwide. □



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†Constipation, which is easily managed in most patients, is the most commonly reported side effect of Calan SR.

\*Verapamil should be administered cautiously to patients with impaired renal function.

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**Contraindications:** Severe LV dysfunction (see *Warnings*), hypotension (systolic pressure < 90 mm Hg) or cardiogenic shock, sick sinus syndrome (if no pacemaker is present), 2nd- or 3rd-degree AV block (if no pacemaker is present), atrial flutter/fibrillation with an accessory bypass tract (eg, WPW or LGL syndromes), hypersensitivity to verapamil.

**Warnings:** Verapamil should be avoided in patients with severe LV dysfunction (eg, ejection fraction < 30%) or moderate to severe symptoms of cardiac failure and in patients with any degree of ventricular dysfunction if they are receiving a beta-blocker. Control milder heart failure with optimum digitalization and/or diuretics before Calan SR is used. Verapamil may occasionally produce hypotension. Elevations of liver enzymes have been reported. Several cases have been demonstrated to be produced by verapamil. Periodic monitoring of liver function in patients on verapamil is prudent. Some patients with paroxysmal and/or chronic atrial flutter/fibrillation and an accessory AV pathway (eg, WPW or LGL syndromes) have developed an increased antegrade conduction across the accessory pathway bypassing the AV node, producing a very rapid ventricular response or ventricular fibrillation after receiving I.V. verapamil (or digitalis). Because of this risk, oral verapamil is contraindicated in such patients. AV block may occur (2nd- and 3rd-degree, 0.8%). Development of marked 1st-degree block or progression to 2nd- or 3rd-degree block requires reduction in dosage or, rarely, discontinuation and institution of appropriate therapy. Sinus bradycardia, 2nd-degree AV block, sinus arrest, pulmonary edema and/or severe hypotension were seen in some critically ill patients with hypertrophic cardiomyopathy who were treated with verapamil.

**Precautions:** Verapamil should be given cautiously to patients with impaired hepatic function (in severe dysfunction use about 30% of the normal dose) or impaired renal function, and patients should be monitored for abnormal prolongation of the PR interval or other signs of overdosage. Verapamil may decrease neuromuscular transmission in patients with Duchenne's muscular dystrophy and may prolong recovery from the neuromuscular blocking agent vecuronium. It may be necessary to decrease verapamil dosage in patients with attenuated neuromuscular transmission. Combined therapy with beta-adrenergic blockers and verapamil may result in additive negative effects on heart rate, atrioventricular conduction and/or cardiac contractility; there have been reports of excessive bradycardia and AV block, including complete heart block. The risks of such combined therapy may outweigh the benefits. The combination should be used only with caution and close monitoring. Decreased metoprolol and propranolol clearance may occur when either drug is administered concomitantly with verapamil. A variable effect has been seen with combined use of atenolol. Chronic verapamil treatment can increase serum digoxin levels by 50% to 75% during the first week of therapy, which can result in digitalis toxicity. In patients with hepatic cirrhosis, verapamil may reduce total body clearance and extrarenal clearance of digitoxin. The digoxin dose should be reduced when verapamil is given, and the patient carefully monitored. Verapamil will usually have an additive effect in patients receiving blood-pressure-lowering agents.

References: 1. Data on file, Searle. 2. Edmonds D, Würth JP, Ba. Twenty-four-hour monitoring of blood pressure during calcium antagonist therapy. In: Fleckenstein A, Laragh SH, eds. *Hypertension—the New Verapamil In Focus*. New York, NY: Churchill Livingstone; 1987:94-101. 3. KA. Effects of long-term verapamil therapy on serum lipids and other parameters. *Am J Cardiol*. 1990;66:131-151. 4. Fagher B, Henningsson C, et al. Antihypertensive and renal effects of enalapril and slow-release verapamil in essential hypertension. *Eur J Clin Pharmacol*. 1990;39(suppl 1):1-6. 5. Schmieder RE, Messerli FH, Garavaglia GE, et al. Cardiovascular effects of verapamil in patients with essential hypertension. *Circulation*. 1990;82:1036. 6. Midtbø K, Lauve O, Hals O. No metabolic side effects of long-term treatment with verapamil in hypertension. *Angiology*. 1988;39:1025-1029.

Disopyramide should not be given within 48 hours before or 24 hours after verapamil administration. Concomitant use of flecainide and verapamil may have additive effects on myocardial contractility, AV conduction, and repolarization. Combined verapamil and quinidine therapy in patients with hypertrophic cardiomyopathy should be avoided, since significant hypotension may result. Concomitant use of lithium and verapamil may result in an increased sensitivity to lithium (neurotoxicity), with either no change or an increase in serum lithium levels; however, it may also result in a lowering of serum lithium levels. Patients receiving both drugs must be monitored carefully. Verapamil may increase carbamazepine concentrations during combined use. Rifampin may reduce verapamil bioavailability. Phenobarbital may increase verapamil clearance. Verapamil may increase serum levels of cyclosporin. Verapamil may inhibit the clearance and increase the plasma levels of theophylline. Concomitant use of inhalation anesthetics and calcium antagonists needs careful titration to avoid excessive cardiovascular depression. Verapamil may potentiate the activity of neuromuscular blocking agents (curare-like and depolarizing); dosage reduction may be required. There was no evidence of a carcinogenic potential of verapamil administered to rats for 2 years. A study in rats did not suggest a tumorigenic potential, and verapamil was not mutagenic in the Ames test. Pregnancy Category C. There are no adequate and well-controlled studies in pregnant women. This drug should be used during pregnancy, labor, and delivery only if clearly needed. Verapamil is excreted in breast milk; therefore, nursing should be discontinued during verapamil use.

**Adverse Reactions:** Constipation (7.3%), dizziness (3.3%), nausea (2.7%), hypotension (2.5%), headache (2.2%), edema (1.9%), CHF, pulmonary edema (1.8%), fatigue (1.7%), dyspnea (1.4%), bradycardia: HR < 50/min (1.4%), AV block: total 1°, 2°, 3° (1.2%), 2° and 3° (0.8%), rash (1.2%), flushing (0.6%), elevated liver enzymes, reversible non-obstructive paralytic ileus. The following reactions, reported in 1.0% or less of patients, occurred under conditions where a causal relationship is uncertain: angina pectoris, atrioventricular dissociation, chest pain, claudication, myocardial infarction, palpitations, purpura (vasculitis), syncope, diarrhea, dry mouth, gastrointestinal distress, gingival hyperplasia, ecchymosis or bruising, cerebrovascular accident, confusion, equilibrium disorders, insomnia, muscle cramps, paresthesia, psychotic symptoms, shakiness, somnolence, arthralgia and rash, exanthema, hair loss, hyperkeratosis, macules, sweating, urticaria, Stevens-Johnson syndrome, erythema multiforme, blurred vision, gynecomastia, galactorrhea/hyperprolactinemia, increased urination, spotty menstruation, impotence.

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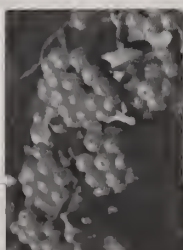
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## Let My People Go!

America's periodic catharsis of political power is now underway, relieving partisan tensions and rewinding the spring of our national clock. This quadrennial purgation, as usual, is both painful and pleasing in variable degree to various contenders. Interestingly, this 1992 cycle was affected by the culmination of several crucial events in human history.

The Cold War has ended, Russia and the United States have become friendly, and only one superpower remains in the world. The terrible *Pax Atomicus* of the Cold War has been superseded by a nascent *Pax Americanus*. Socialism as a governance philosophy has been proven to be defective and repressive. The curtain has been raised on an era of international relationships dominated by open trade and scientific development rather than by the fear of military power.

In the infinite flow of human events, the United States presently finds itself in the interesting position of having no significant external enemy to confront. Most of America's significant problems are internal and cultural, and we should now reappraise our national mores and values during the opportunity presented as the military machines of the world... "beat their swords into plowshares." As a nation we should release the economic shackles that our own government mistakes have placed on our citizens.

Our society should now reconsider the relationship between our government and our citizens. During the *Pax Atomicus* our citizens have been demoted from creative participants to mere taxpayers forced to support financially a herd of special interest groups. As a result, the citizenry now has general dissatisfaction with the actions of the judicial, legislative, and administrative branches of our government at both the national and state levels. But our lawmakers ignore the citizens' inquietude, and now our social fabric is often rent by criminal conduct, and racial

and gender tensions, and envy. America's traditional credo of personal development and the meritocracy of individual effort has withered, and is being replaced with government regulations and grants, and "political correctness."

Globally, the tenets of socialism have been widely discredited, but here in the United States many elements of socialism have already been incorporated into the body of United States law, and these statist edicts are a major cause of our present health care crisis.

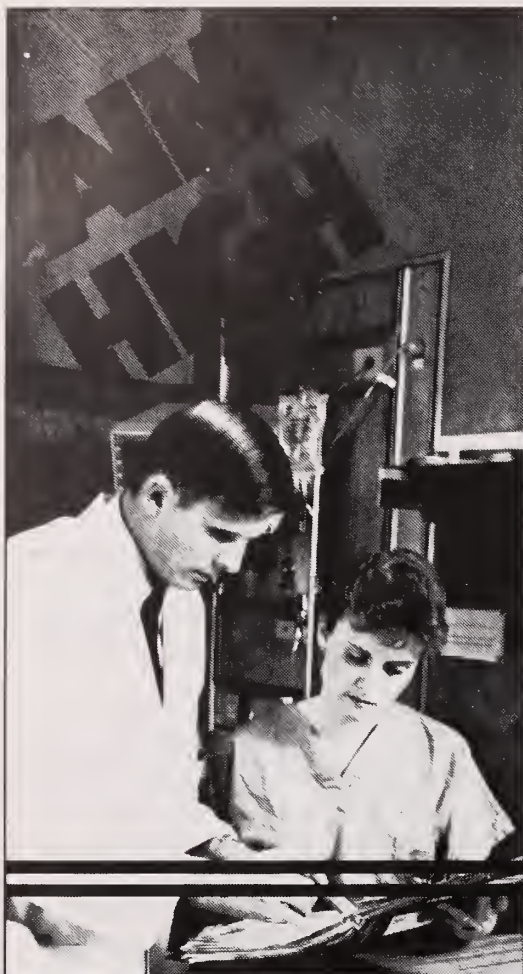
Regardless of the philosophical label, whether we call it socialism, monarchy, nazism, statism, or authoritarianism, the government that does for its citizens what the citizens could have done for themselves inevitably and always suppresses progress and causes economic hardship. The adage "Medical progress is inversely proportional to government participation" has arisen from the empiric observation of this phenomenon.

The stultifying effect of government on medical practice is fairly well understood by physicians, and, while Congress clearly understands the importance of medicine as a commodity, the lawmakers have little concept of the critical elements of the patient-physician relationship that is necessary for good medical care. We physicians must become more effective in informing Congress of the ill effects the government programs have on the delivery of medical care. At this time of national renewal, the medical professional's contribution to the *Pax Americanus* should be to convince Congress that even sick people and physicians should be free American citizens.

Congress, let my people go!

*Ray V. McIntyre, M.D.*





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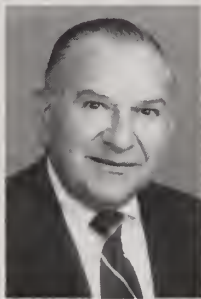
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## Dear Fellow Physicians

What a difficult but exciting time in history! We are watching the political environment totally change with a new Democratic President who will be installed in January and will have a Democratic Congress with which to work. It is also a time when the provider tax was voted down by the people of Oklahoma, causing the DHS to struggle to come up with a solution to a huge funding shortfall. The governor will decide whether to call a special session of the legislature specifically to deal with this problem.



It is also a time when we are looking at the most revolutionary change in the delivery of health care in the United States. The President-Elect talks about health care reform. It was a central issue in the campaign for all three candidates. Perhaps we will go to a single payor system; perhaps to a different universal system; perhaps to a pay or play system.

Whatever the system, I think the future will see significant change in what we have become accustomed to for medicine in the United States. In Oklahoma, a legislative committee studying Medicaid reform has recommended a managed care system for DHS patients.

As the new year approaches, my plea is that we all do our very best to take care of those patients who are in need of care. I urge all to keep an open mind as to what we, as individuals, can do to preserve the honorable profession of medicine.

And as we enter the holiday season in this very diverse state we live in, we say Peace on Earth, Goodwill to All.

A handwritten signature in cursive script that reads "James F. Durrell M.D.".



**"I have never gotten used to people dying. And I don't want to get used to it."**

Dr. Aliza Lifshitz, Internist, Los Angeles, California,  
Member, American Medical Association

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Born and raised in Mexico and educated at one of Mexico City's finest medical schools, Dr. Lifshitz now serves the Hispanic community in Southern California. Over a third of her patients have tested HIV positive. Most live below the poverty level. Many are illegal aliens.

"I never forget what it means to be a doctor, and what it means is embodied in the Principles of Medical Ethics of the American Medical Association (AMA)," states Dr. Lifshitz.

You are invited to join Dr. Lifshitz and to join with her in her efforts to bring quality health care to those in need. Become a member of the AMA today.

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# Myocardial Perfusion Scanning in Chronic Coronary Artery Disease

Jay A. Harolds, MD, and Kenneth Coffey, MD

This article discusses perfusion imaging of the heart with thallium, teboroxime, and sestamibi using planar and tomographic nuclear radiology methods. The relative merits of treadmill stress and pharmacologic stress with adenosine or dipyridamole are also discussed.

This article gives an overview of the subject of perfusion imaging in chronic coronary artery disease and summarizes some recent developments in this field, including the use of SPECT (single photon emission computed tomography), the use of persantine or adenosine for pharmacologic stress, the reinjection thallium technique, the development of new radiopharmaceuticals, the clinical indications for ordering these studies, some quality assurance and technical issues, and how these studies are interpreted.

Thallium distributes similarly, but not identically, to potassium.<sup>1</sup> To optimize thallium imaging, the patient should be NPO for at least four hours prior to doing the study.<sup>2</sup> The patient should also abstain from smoking or chewing gum. If possible, the patient should have no beta-blockers for one or two days prior to exercise thallium imaging.<sup>2</sup> A day before the procedure it is preferable to discontinue calcium channel blockers and long-acting nitrates.<sup>3,4</sup> In order to have a study done in one day, the typical protocol is to inject the patient with 2 to 4 millicuries of thallium 201 forty-five to ninety seconds before the

conclusion of an exercise treadmill procedure.<sup>4,5</sup> If possible, the stress should be continued until the patient achieves at least 85% of the maximum predicted heart rate. However, in patients who have had a very recent myocardial infarction, but are clinically stable, the peak heart rate is typically limited to 120 to 130 per minute.<sup>6</sup> Reasons to conclude the exercise testing before the desired heart rate is achieved would include decreasing systolic blood pressure, more than 3 mm of ST depression, significant symptoms, or a significant arrhythmia.<sup>4</sup> Immediate images are obtained and then, three to five hours later, redistribution images are obtained. The patient should not eat until after the final imaging is concluded.<sup>3</sup> The heart is then imaged with planar (nontomographic) imaging and/or SPECT.

## Planar Imaging

On planar imaging, the heart will appear in a horseshoe or donut configuration. For planar imaging, some authorities recommend using anterior, 45 degree LAO, and either a 70-degree or 90-degree view. Other individuals suggest obtaining the optimal view of the septum and then obtaining the other views by rotating the patient 40 to 45 degrees in either direction.<sup>6</sup> It is frequently recommended that a left lateral view be obtained with the patient assuming a right-side down decubitus position so that diaphragmatic attenuation is decreased.<sup>5</sup> On the normal immediate images, homogeneous activity is seen except for some mild apical thinning which may be seen as a normal variation. Typically, normally decreased activity in

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the apex is in a small area and shows no change between the rest and delayed images. Also, the other walls are not involved. Asymmetric thinning in the apex is abnormal.<sup>2</sup>

Normally less counts are seen in the septum, especially in the membranous septum, than elsewhere.<sup>7,8</sup> Some individuals suggest shifting the left breast away from the heart by tape or using a breast binder in women with large breasts, since the extra soft tissue attenuation from the breast tissue will appear to decrease cardiac activity.<sup>4</sup> Typically the breast artifact will be anterolateral.

The right ventricular free wall is thinner than the left but normally will be faintly seen in the immediate postexercise images, but may not be seen on the delayed images. Left ventricular dilatation on the immediate poststress, but not delayed images, usually means severe coronary artery disease. A very prominent right ventricle on rest images means right ventricular hypertrophy.<sup>9</sup> Normally the right ventricular chamber is mildly larger than the left. In right ventricular volume overload, the right ventricle is moderately larger than the left ventricle. If there is right ventricular pressure overload, the right ventricular free wall can have increased thickness and straightening of the septum.<sup>10</sup> A very prominent right ventricular free wall on redistribution views is associated with right ventricular failure and hypertrophy.<sup>2</sup>

In a normal patient, the activity per unit area is about half as much during the redistribution images as initially. In other words, about half of the activity "washes out" of normal myocardium and redistributes elsewhere in four hours. In an area of scarring, decreased activity is seen on both the immediate and delayed images without significant change.<sup>11</sup> In a patient with ischemia, decreased activity is seen in the area on the initial images, and then the activity appears similar to that seen in the rest of the myocardium on the delayed images. The reason for this is that during the redistribution period, activity is washed out of the normal myocardium at the same time that increasing activity goes into the ischemic area.<sup>3-6</sup> See Figure 1.

Very rarely, the only indication of ischemia on planar imaging is a decreased rate of washout due to the low flow in the area distal to coronary artery stenosis.<sup>12</sup> Other causes of delayed washout are a submaximal heart rate during the stress part of the study and infiltration of the thallium dose.<sup>4</sup>

Occasionally one sees focally less thallium in an area during redistribution than immediately. This

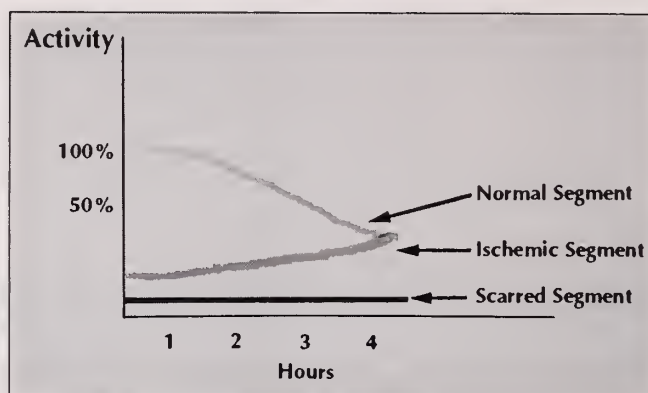


Figure 1. Cardiac activity in an area is related to its perfusion. This graph shows how activity changes with the time following stress in normal, ischemic, and scarred areas.

phenomenon of reverse redistribution is not well understood.<sup>3-5</sup> Most feel that its etiology is simply unknown. Others feel that it is due to a prior subendocardial infarction. Still others feel that it is a nonspecific indicator of coronary artery disease, and not necessarily in that area. It may also be due to cardiomyopathy.

Reversible anterior septal perfusion may be seen in some individuals with left bundle branch block who do not have objective evidence of ischemic heart disease on coronary arteriography. This is theorized to be due to asynchronous septal contraction.<sup>13</sup> Therefore, one cannot make a confident diagnosis of septal ischemia in patients with left bundle branch block.<sup>3</sup>

Reversible perfusion defects can also occur in some patients with mitral valve prolapse or with valvular aortic stenosis.<sup>3</sup> Reversible defects have also been found in some patients with idiopathic congestive cardiomyopathy.<sup>3</sup> Although the thallium study is fairly specific, there are other causes of abnormal distribution of the thallium including myocarditis, myocardiopathy, cardiac sarcoidosis, infiltration of the heart with tumor, cardiac trauma, and coronary artery spasm.<sup>6</sup>

One problem with thallium imaging is that some areas with severe ischemia do not redistribute by the time the three- to five-hour delayed images are done. This delayed wash-in is due to the very tight coronary artery stenosis. Twenty-four-hour delayed imaging has been helpful to diminish this problem. More recently, a reinjection technique has been employed.<sup>14-18</sup> At two to four hours postinjection, the patient is injected with about a third to half of the dose of thallium that was given initially. In one study,<sup>19</sup> 49% of fixed defects on standard redistribution images showed normal thallium activity after the reinjection.

Multiple other reports have confirmed the advantage of the reinjection thallium technique.

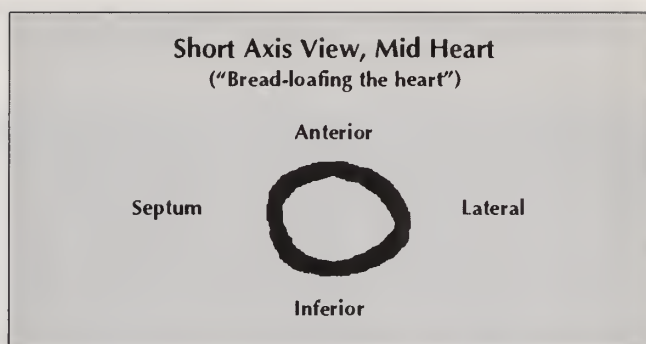
Thirty-seven percent to 58% of persistent defects on four-hour delayed thallium images show some viable myocardium on position emission computed tomography (PET) images.<sup>2-20</sup> Some, but not all, of these persistently abnormal areas shown to be ischemic on PET are shown to fill-in on twenty-four-hour delayed images or by utilizing the reinjection technique. In one study, 25% of persistent defects on reinjection thallium images showed viable myocardial tissue using PET images. In another paper, 46.5% of fixed defects and 64.5% partially reversible defects showed ischemia but not scarring on PET.<sup>21</sup> The reinjection thallium technique utilizing SPECT imaging had exact agreement with PET imaging in 88% myocardial segments in which no fill-in was seen on standard delayed thallium images.<sup>22</sup> According to Dr. Goldstein,<sup>20</sup> the relative value of thallium and PET imaging is as follows:

	Sensitivity	Specificity	Accuracy
Thallium 201	79%	77%	78%
PET	95%	82%	92%

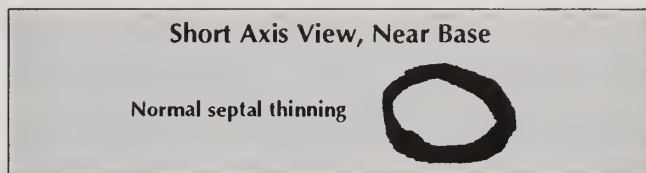
### SPECT Imaging

In the SPECT technique, the camera rotates around the patient a minimum of 180 degrees. A circular orbit<sup>23,24</sup> is usually used, but an elliptical orbit can be used for its better resolution on thin individuals.<sup>4</sup> In computer space, the cardiac image will be reoriented as if it is sticking straight out of the chest rather than down and to the left. The heart is then cut into three planes. The image slice plane parallel to the floor produces the horizontal long axis images which consist of multiple horseshoe images from superior to inferior. The longitudinal long axis images are cut in a plane perpendicular to the floor and go from septal to lateral. The third plane is perpendicular to the floor but in a direction perpendicular to the long axis of the heart so that it would be similar to the direction of "bread-loafing" the heart into slices. The short axis images will appear as donuts except near the apex, where they will appear as a rounded area of central increased activity. Near the base of the heart, the membranous septum will show as an area of decreased activity (Figs 2 and 3).

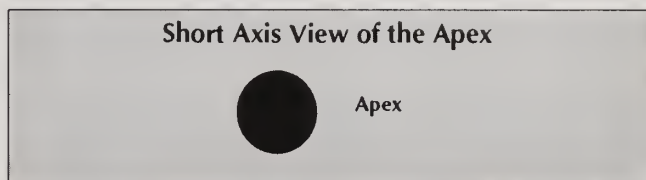
One of the problems with perfusion myocardial



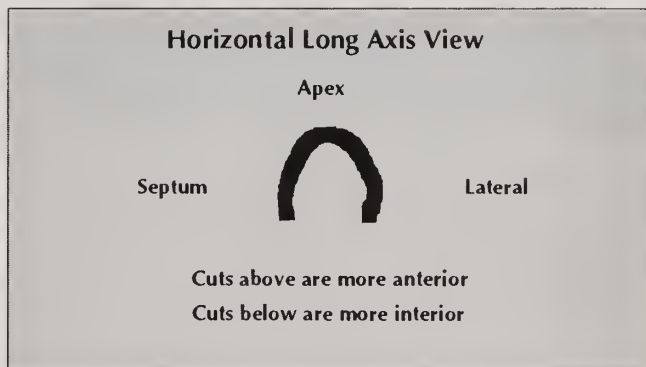
2A.



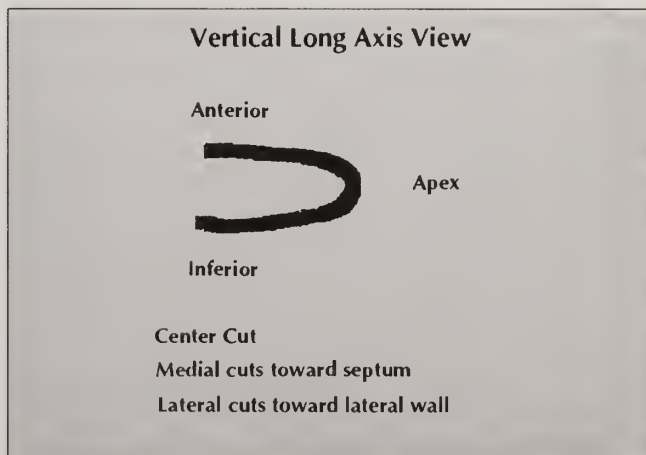
2B.



2C.



2D.



2E.

Figure 2A-E. The appearance of SPECT images of the normal heart.



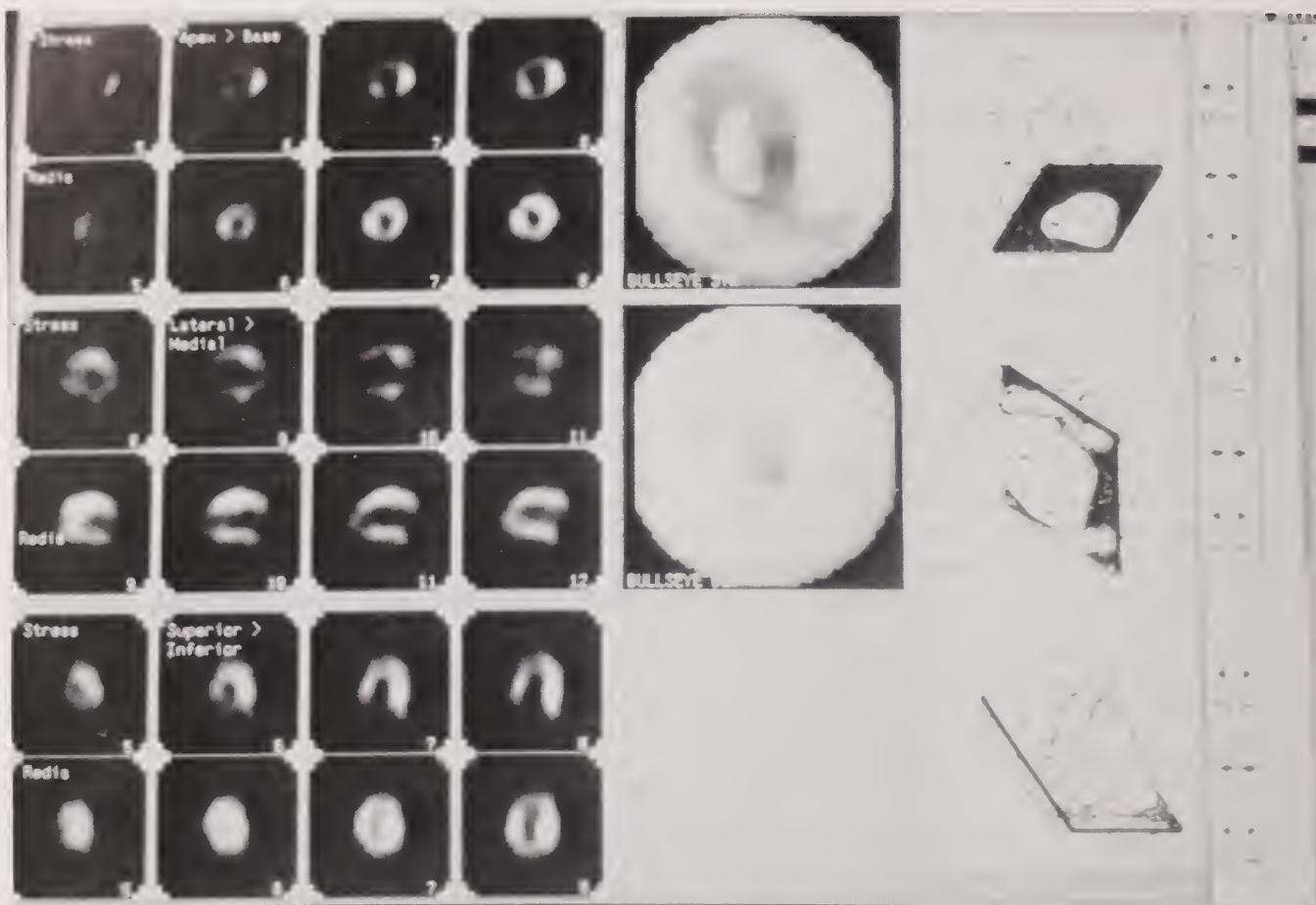


Figure 3. Initial images show decreased activity in the anterior, septal, inferior, and apical areas of the left ventricle. These correspond to the usual distribution areas of the left anterior descending and right coronary arteries. The delayed images are normal. The

findings are due to ischemia. Had the delayed images been the same as the initial images, this would have been consistent with scarring. The central circular images are the bulls-eye displays. The far right images show the plane of weight for the SPECT images.

imaging is that immediately after exercise, the patient's movement of the diaphragm is deeper than later. Therefore, if one takes serial images of the heart, it appears to slowly creep upward for several minutes in relative position in the chest. If one takes SPECT images immediately after exercise is concluded, and then takes images several hours later, one can produce a spurious decrease in activity counts in the inferior wall, with apparent fill-in later mimicking ischemia in the inferior wall due to the this phenomenon of "upward creep."<sup>12</sup> In order to eliminate this, it is suggested that postexercise SPECT images not be begun for 5 to 10 minutes following exercise. During the first 5 to 10 minutes, it is suggested instead that initial planar anterior and LAO views be obtained. This will help to assess the relative size of the left and right ventricles.

Also, if one draws a region of interest around part

of the left ventricular free wall and another around an adjacent portion of lung, a parameter called the lung-to-heart ratio may be calculated. The upper limit of normal on an immediate postexercise thallium planar image is given as 50% to 55% in various references.<sup>3</sup> A higher ratio can be seen with severe and extensive coronary artery disease and indicates cardiac decompensation during the stress.<sup>25-28</sup> Valvular disease, diminished left ventricular compliance, suboptimal treadmill exercise, and the use of pharmacologic stress can all result in a higher lung-to-heart ratio.<sup>2</sup>

In one study, SPECT improved diagnostic sensitivity from 68% to 80% over planar thallium imaging.<sup>29</sup> Other papers also report better sensitivity and specificity for SPECT than planar thallium imaging, especially for the left circumflex coronary artery.<sup>7,30</sup> A more detailed comparison of SPECT and planar thal-

thallium is provided by Dr. Garcia (Table).<sup>31</sup> Otherwise no significant difference is seen between planar and SPECT studies.

In a study on the usefulness of the bull's-eye method, the overall sensitivity was 95%, the specificity was 74%, and the accuracy for the presence of coronary artery disease was 92%.<sup>32</sup> A SPECT thallium treadmill exercise study costs about one-third as much as a coronary arteriogram and a day as an inpatient.

## Pharmacologic Stress

Up to 25% to 30% of patients with coronary heart disease can't reach 85% of their maximum predicted heart rate with treadmill stress.<sup>2</sup> This could be due to peripheral vascular disease, orthopedic problems, poor exercise tolerance, or lack of cooperation. For these patients, persantine (dipyridamole) or adenosine may be used for perfusion imaging.<sup>7,10,33-51</sup> A dipyridamole thallium study is suggested in appropriate patients before abdominal aortic surgery.<sup>52</sup> Dipyridamole or adenosine infusion increases the coronary blood flow through normal arteries by a factor of four or more, but there will be little or no increase in the flow through stenotic vessels. Exercise treadmill testing increases blood flow through normal vessels by only 1.5 to 2 times.<sup>2</sup> Vessel dilatation is caused by adenosine interaction with the adenosine A2 receptors in the cell wall. Dipyridamole blocks the transport of adenosine over the cell wall, which results in greater extracellular levels of adenosine.

If one infuses either agent, and also administers thallium, the results of the subsequent images have a sensitivity and specificity similar to thallium images obtained after a satisfactory treadmill stress study.

The adenosine infusion is 0.14 mg per kilogram per minute for 4 to 6 minutes. Half-way through the infusion, inject thallium.<sup>53</sup> If one chooses to use persantine, give 0.14 mg per kilogram per minute for 4 minutes. Thallium is administered about three to four minutes after the conclusion of the infusion. Some suggest hand grip exercise during the period from 2 to 6 minutes after the conclusion of the persantine infusion to improve the lung-to-heart ratio.<sup>7</sup>

The advantages of giving persantine are that it is FDA-approved for this purpose and it has reportedly fewer side effects than adenosine administration. Side effects with dipyridamole infusion are reported in up to 50% of patients, with chest pain occurring in

	Planar Thallium Imaging	SPECT Thallium Imaging
Sensitivity for Detection of Left Circumflex Disease	41%	69%
Specificity for Right Coronary Artery Disease	47%	72%
Sensitivity for Right Coronary Artery Disease	71%	89%
Sensitivity for LAD Disease	75%	71%

20% to 30% of patients. Incidentally, chest pain occurs in some patients who do not have coronary artery disease. Severe side effects are very uncommon but include ventricular tachycardia, ventricular fibrillation, and rarely, death. From 50 to 250 mg of aminophylline is given slowly intravenously as needed when severe side effects begin to occur. Some workers routinely give 50 mg of IV aminophylline 20 minutes into the study.<sup>54</sup> However, the half-life of persantine is longer than the aminophylline half-life, so side effects can reoccur after the aminophylline has worn off. If usual aminophylline dosing does not alleviate the side effects, sublingual nitroglycerin should be used.<sup>7</sup> Relative contradictions to dipyridamole use include severe liver disease, severe emphysema or respiratory distress, unstable angina, and recent myocardial infarction.<sup>3</sup> Theophylline should not be given for 36 hours prior to a dipyridamole study, and drinks containing caffeine should be avoided for 24 hours before the exam.<sup>3</sup>

In one study, patients were stressed once with treadmill exercise, and 66% had chest pain. Then on another occasion, the same individuals had a dipyridamole study, and angina was seen in 42%.<sup>6</sup>

The big advantage of adenosine over persantine is that adenosine has a half-life in plasma of less than 7 seconds. Hence, if the adenosine infusion is stopped, the drug effect will stop in a very short time, so aminophylline use is rarely required. Also, the patient will experience the drug effect for a shorter period with adenosine rather than persantine use. Another advantage of adenosine use is that maximal vessel dilatation is always believed to occur, whereas it is not maximal in 20% of the patients receiving



persantine. About three quarters of the patients getting an adenosine infusion reportedly have side effects. However, these are mostly minor, with flushing in 40%, chest pain in up to 50%, ischemic ST changes in 12%, first degree block in 10%, second degree block in 3% to 6%, and third degree block in less than 1% when a six-minute adenosine infusion is used. Fortunately, the conduction abnormalities usually last a very short time, and usually do not cause any problems.<sup>53</sup> We have done hundreds of adenosine studies; we have never had a severe reaction and have never needed to give medication for any reaction. We also have found that side effects are much less when a four-minute adenosine infusion is used. It has been found that lung thallium uptake and left ventricular dilatation after adenosine correlates with the severity of coronary artery disease.<sup>55</sup> If adenosine is used, instead of treadmill exercise, it adds about 20% to the cost of the procedure.

There are some patients who cannot exercise satisfactorily but who have contraindications to persantine or adenosine. This includes people with low blood pressure, substantial hypotension, severe congestive heart failure, asthma, or COPD with bronchial spasm. Dobutamine increases the heart rate, contractility, and systolic blood pressure and therefore mimics the effect of exercise. Coronary blood flow goes up in normal vessels and increases less or not at all in stenotic vessels. Ninety-four percent sensitivity and 87% specificity for coronary artery disease detection is reported using dobutamine with thallium.<sup>56</sup> Chest pain was present in half the patients with ischemic heart disease and in one of four patients without ischemic heart disease. The patients were given increasing doses from 5 to 20 mcg per kilogram per minute at 5-minute intervals. Verani has given up to 40 mcg per kilogram per minute.

### Prognosis and Correlation with Other Studies

The exercise EKG in a tabulation of 30 different papers shows a sensitivity of 72%, and specificity of 79% for angiographically important coronary artery disease. For 30 different studies on thallium, the sensitivity was 83.6%, and the specificity was 88.4%.<sup>6</sup> In one study, the sensitivity of the stress EKG was 65% and that for the thallium and EKG tests combined was 91%.<sup>57</sup>

Ninety-five percent of patients with significant left main coronary artery stenosis or three-vessel coronary artery disease have an abnormal thallium study.<sup>4</sup> Collateral vessels help prevent the appearance of ischemic defects on the thallium study, but

they are less often seen in the LAD distribution than in the other two circulations. It should also be remembered that angiography is an imperfect "gold standard" with some difficulty in assessing the hemodynamic significance of borderline lesions. Also, small vessel disease can cause significant thallium abnormalities despite a relatively normal arteriogram. The specificity of the exercise EKG is lower for women than men. The specificity of the exercise thallium for men is 91% while the specificity of the exercise EKG for women is 59%.<sup>58</sup> The presence of transient ischemic defects on the exercise thallium study in one study was a highly useful predictor of death or nonfatal myocardial infarction in a study of 100 patients with chest pain and no prior myocardial infarction. If a patient had three reversible defects, the incidence of a significant cardiac event was 33% in a follow-up period of three to five years. If there were no ischemic areas, the incidence was only 3%.<sup>59</sup> In another study, an ischemic area meant a 14.3% per year incidence of significant cardiac events, whereas it was 0.8% if the study was normal.<sup>60</sup> Multiple other authors have commented on the use of thallium imaging for risk stratification.<sup>61</sup> In one paper, the best indicator for significant future cardiac events was the size of the thallium defect on the immediate images.<sup>62</sup> One paper suggested that finding ischemic areas on thallium imaging may be more significant than coronary arteriography in predicting future cardiac events.<sup>59</sup>

The thallium examination is the most useful noninvasive test for predicting graft patency in patients who have undergone prior bypass surgery. In one paper, when the thallium study was normal or showed ischemia, a little over 80% of the grafts were patent. Persistent defects were associated in 73% of cases with an occluded graft.<sup>63</sup>

Thallium imaging helps show who will benefit from bypass surgery.<sup>6</sup> If a thallium study shows full redistribution before surgery, the postsurgery thallium images are usually normal. If the thallium study examination shows partial redistribution before surgery, 70% will have a normal thallium study after surgery. In areas with markedly decreased activity, and no redistribution, surgery helped infrequently. However, even if an akinetic area is seen on a gated study, if there is redistribution or a mild persistent defect on thallium imaging, then bypass surgery usually helps. If there was ischemia demonstrated on a pre-operative thallium study, four out of every five patients had a 5% or greater rise in left ventricular ejection fraction after bypass surgery. If there was a persistent defect on thallium imaging pre-opera-



tively, only 22% had a 5% or greater rise in left ventricular ejection fraction surgery.

**Quantitative Analysis**

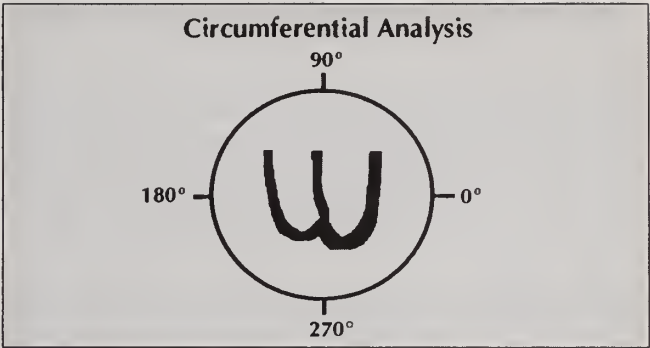
In an effort to simplify myocardial imaging and to obtain only a few images rather than a multitude of images presented for analysis, quantitative myocardial imaging has its advocates in planar imaging and in SPECT imaging.<sup>3,5,8,12,64</sup> Also, quantitative planar and tomographic thallium images reduce the intraobserval variability and may increase sensitivity and specificity.

One method of quantitative planar imaging consists of a graphical plot of the counts as if the heart were a circle, with the maximum counts being plotted according to the number of degrees from a set point.<sup>5,31</sup> Normally, the redistribution line has only about half as many counts as the initial postinjection count line. If the initial activity counts go down, and the redistribution counts in this area rise to meet this activity, that would be indicative of ischemia. Lower than 2.5 standard deviations from normal on initial activity or washout on a continuous 18° arch when compared to normal volunteers is said to be abnormal. Certain other conditions must also be satisfied to have an abnormal reading.<sup>4</sup>

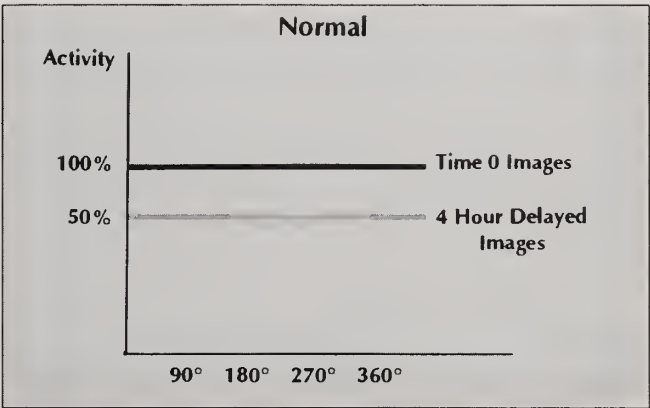
For SPECT imaging, a different approach is used.<sup>7,8,31</sup> Fifteen concentric rings and 40 radii out from the center define areas of the heart using the short axis views. Maximum counts in each area are then taken and used for plotting values. This can then be color-coded and displayed in a big circle which resembles a bull's-eye, hence its name. In the center of the bull's-eye is a point which corresponds to the apex. It is somewhat analogous to the polar map displays we learned about in geography, with the apex positioned like the North Pole, centrally. Because of the difficulty in defining the apex on the short axis view, the vertical long axis view is used to give the counts in the apex.

Along the periphery of the bull's-eye is the base of the heart. Inferiorly represents the inferior wall of the heart. On one's left as this is viewed is the septum and on one's right is the lateral wall. Superiorly is the anterior wall. The right coronary artery/PDA typically supplies the inferior wall and inferior portion of the septum. The LAD typically supplies the left

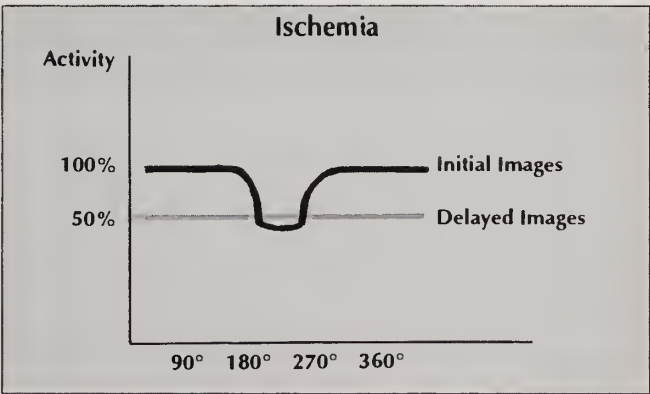
Figure 4. Quantitative analysis planar imaging can consider the maximum activity in the ventricular wall along multiple imaginary lines radiating out from the center of the heart, and plotted as activity for each degree used.



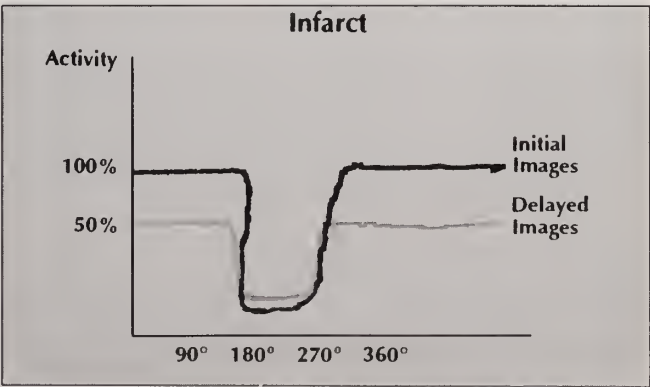
4A. Diagram of how radians would be drawn around the heart in degrees.



4B.



4C.



4D.

ventricular apex, superior two-thirds of the septum, the anterior wall, and the upper portion of the lateral wall. The circumflex coronary artery supplies the remainder of the heart. Obviously, with different individuals, some variation in the blood supply normally occurs.

Each patient is then compared to a sex-matched group of volunteers since the inferior wall tends to be lower in activity in men, thought to be due to diaphragmatic attenuation, and anterolaterally there may be decreased activity in females due to breast attenuation. However, women with very small breasts may also be compared with the male normal file. In one bull's-eye color display, one can then see how many standard deviations from the mean that patient is from the normal group. On the blackout display bull's-eye image, significant areas of the heart that have activity more than 2.5 or 3 standard deviations below the normal mean are assigned the color black.

In one study of patients with chest pain, thallium was found to be 84% sensitive and 88% specific in making a diagnosis of coronary artery disease. Quantitative planar thallium imaging is better than nonquantitative imaging, particularly in the circumflex area.<sup>5</sup> For the presence or absence of coronary artery disease, the planar thallium study with quantitation was 91% to 93% sensitive and 90% to 91% specific.

With SPECT imaging, the thallium study was 82% to 98% sensitive and 84% to 93% specific, depending on the report in the literature. SPECT is more sensitive than planar imaging for detecting a prior MI.<sup>6</sup> Multiple authors have found that SPECT does have greater sensitivity for the detection of circumflex disease than quantitative planar thallium imaging.

SPECT, rather than planar imaging, also allows for greater detection of triple-vessel disease. This is 63% instead of 19% in one series. The reason is that a significant area of stenosis can cause a limit on the amount of exercise which can be done, and areas of lesser stenosis may not be detected on planar imaging. However, because tomographic imaging can cut just in certain imaging planes, it is more sensitive for the detection of multivessel disease.

### **Teboroxime and Sestamibi**

Thallium is not an ideal radiopharmaceutical in that it is cyclotron-produced and must be shipped in. It is therefore not necessarily available for emergency room patients or add-on in- or outpatients. Also, most

of the photons of this radiopharmaceutical are lower than is optimal for imaging. Two new radiopharmaceuticals are now available in kit form that are labeled with technetium-99m-pertechnetate. These new agents can be quickly available and have better imaging characteristics than thallium.<sup>60</sup> For example, the breast attenuation artifact is less of a problem with the new agents.<sup>12</sup> Also, since the half-life is shorter, more activity can be given to patients without increasing their radiation. First-pass imaging is also feasible.<sup>65-67</sup>

The first of these radiopharmaceuticals is teboroxime, known by the trade name Cardiotec. This radiopharmaceutical penetrates cell membranes rapidly since it is lipophilic. Its uptake in the myocardium is proportionate to blood flow over a large variability in blood flow. The myocardial clearance half-life is usually stated to be 10 to 15 minutes.<sup>65</sup> However, another researcher finds the clinical half-life to be only 6 to 7 minutes.<sup>68</sup> With a half-life this short, it is imperative to image the patient extremely rapidly. The usual recommendation is to inject 15 to 25 mCi of teboroxime 30 seconds to a minute before the stress test is concluded.<sup>69</sup> One waits only 1 to 2 minutes following the injection for the blood pool activity to clear and then SPECT or planar imaging is started. Imaging is concluded in only 5 to 8 minutes.<sup>69,70</sup> Sixty to 90 minutes after the initial injection, another 15 to 25 mCi injection is done and a rest image is obtained. Again, wait 1 to 2 minutes and then do the repeat SPECT or planar imaging. It has been found that at one hour, there will ordinarily be no significant myocardial counts left. However, overlapping cardiac and liver activity can be a significant problem with this agent.<sup>71</sup> In view of the short imaging time, it may be desirable to have a two- or three-headed camera, since this allows for a greater number of counts to be obtained per unit time.<sup>70</sup> Wittry<sup>50</sup> feels the rapid redistribution of teboroxime causes artifacts with SPECT and that planar imaging is superior with this agent.

Sestamibi, (methoxy-isobutyl-isonitrile) which has the trade name Cardiolite, is the other new technetium-labeled radiopharmaceutical for perfusion imaging.<sup>72</sup> This also accumulates proportional to regional myocardial blood flow. Its half-life for clearance from the heart is about six to seven hours, which is about double that of thallium.<sup>65</sup> A substantial amount of liver activity is seen initially, but this is substantially cleared after one hour.<sup>73</sup> One protocol for same-day sestamibi imaging is as follows: the patient is imaged at rest after 8 to 9 mCi of sestamibi



is given intravenously. At 15 to 30 minutes, 8 ounces of whole milk may be given to help empty activity from the gallbladder. At one hour, rest imaging is done with SPECT. At four hours, an EKG stress study is done, and then an injection of 22 to 25 mCi of sestamibi is made intravenously. At 4 hours and 15 minutes, 8 ounces of whole milk may be given. The rest imaging is then done at about five hours. The problem with the use of sestamibi is that the radiopharmaceutical stays in substantial quantities in the heart for a long period of time, and therefore when one does two injections the same day, some activity will still be present for the second injection. However, the second injection has about three times as much activity as the first, there is 40% greater extraction of the agent by the heart at stress than at rest, and between the biological clearance of the radiopharmaceutical and decay of the radiopharmaceutical, the second set of images is satisfactory.<sup>50,65,71</sup>

It is possible to do first-pass imaging as well as perfusion imaging with sestamibi. When this is done, it has been found that 69% of the information comes from SPECT perfusion imaging and 31% from the first-pass study.<sup>74</sup> One advantage of this agent is that one can wait hours to image a patient.<sup>75</sup>

With a low-energy all-purpose collimator, the spatial resolution with planar thallium imaging is 12 mm, but with SPECT tomography, it is 19 mm. Because of the greater number of counts per second, a high resolution collimator can be used with a technetium-99m agent such as technetium-99m sestamibi, with a resolution of 10 mm with planar imaging and 13 mm with SPECT.

Both technetium agents have a high count rate, but because of the fast redistribution of technetium-99m sestamibi, the acquisition must be fast and so fewer counts are possible than with thallium.

For the evaluation of coronary artery disease, Dr. Hendel<sup>68</sup> has found the following:

	Teboroxime	Reinjection Thallium Technique	Sestamibi
Sensitivity	83%	85%	82%
Specificity	92%	90%	92%

If sestamibi is used instead of thallium, it adds about 30% to the cost.

## Conclusion

It is hoped that this overview of myocardial perfusion

scanning in chronic coronary artery disease will be helpful to Oklahoma physicians and their patients. A future article is planned to discuss other aspects of nuclear radiology of the heart. [J]

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## Symposium on Antimicrobial Therapy III. The Penicillins

Ronald A. Greenfield, MD

This is the third in a series of articles by Dr. Greenfield on antimicrobial therapy.

It is now over 50 years since the first clinical use of penicillin in 1941. There are now over 20 antibiotics in the penicillin family available for clinical use. The family has grown to meet the challenge of the discovery of new bacterial pathogens, the emergence of different microorganisms as pathogens, and the emergence of microbial resistance to penicillins. A classification of the penicillins is presented in Table 1.

Two principles remain very pertinent.<sup>1</sup> Whenever an antibiotic is chosen for treatment, use of one of the penicillins is generally preferable because of their excellent pharmacologic properties, established therapeutic efficacy, and lower cost. Other antibiotics have not been shown to be clinically superior to the penicillins for the treatment of infections caused by sensitive organisms. Thus it is imperative to the practice of essentially any field of medicine to know which penicillins can be used in specific clinical situations. The second principle is that among the various members of the penicillin family, the narrowest spectrum agent that will likely eradicate the infecting pathogen(s) should be chosen, in order to prevent emergence of bacterial resistance, to minimize the risk of superinfection(s), and to contain cost. Let us then systematically discuss the penicillin antibiotics.

### Natural Penicillins

Penicillin G (benzylpenicillin) is the parent drug of the family. Three forms of the drug are now available for parenteral administration. An aqueous crystalline salt of penicillin G is used for intravenous administration. The potassium salt is the usual preparation, but a sodium penicillin G is available for use in the unusual situation of the need for penicillin therapy in a patient who can not tolerate the relatively small additional potassium burden. Penicillin G procaine is a preparation for intramuscular injection; the admixture of procaine to penicillin G reduces pain on injection and slows the intramuscular absorption of penicillin G; this preparation enables therapy for 24 hours or less. Benzathine penicillin G is an intramuscular depot preparation of the drug; it is useful when low serum levels of antibiotic are required for a week or longer. Although an oral form of penicillin G is available, because of its acid lability and therefore poor bioavailability by the oral route, it should not be used.

Some key points about the pharmacokinetics of the penicillin G preparations are in order. These drugs undergo about 20% hepatic metabolism, and the remainder is excreted unchanged in a microbiologically active form in the urine. Penicillin is excreted primarily by tubular secretion as an organic acid; this secretion can be inhibited by probenecid. Probenecid also inhibits the secretion of penicillin from cerebrospinal fluid. Tissue penetration, including brain and cerebrospinal fluid (CSF), is adequate for therapeutic efficacy, given the large ratio of toxic-

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to-therapeutic concentrations. Serious infections are generally treated with 10-20 million units of penicillin per day in 4 or 6 divided doses. The serum half-life of aqueous penicillin G is about 30 minutes, and increases to about 10 hours in the presence of anuria. Dosage reduction is required in the presence of renal insufficiency. A useful formula for the maximum dose of penicillin G in patients with renal insufficiency is that the number of millions of units per day is equal to  $3.2 + (\text{creatinine clearance}/7)$ .<sup>2</sup>

Table 1. A Classification of the Penicillins

Class and Generic Name	Common Trade Names*
<b>Natural Penicillins</b>	
For parenteral administration	
aqueous crystalline penicillin G	many
procaine penicillin G	many
benzathine penicillin G	Bicillin, others
For oral administration	
penicillin V	
(phenoxymethyl penicillin)	Pen-Vee K, others
phenoxyethyl penicillin	many
<b>Semisynthetic Penicillinase-Resistant Penicillins</b>	
For parenteral administration	
methicillin	Staphcillin
oxacillin	Prostaphin, Bactocil
nafcillin	Nafcil, Unipen, others
For oral administration	
cloxacillin	Cloxacpen, Tegapen
dicloxacillin	Dynapen, Dycil, others
<b>Aminopenicillins</b>	
For parenteral administration	
ampicillin	many
For oral administration	
amoxicillin	many
bacampicillin	Spectrobid
hetacillin	Versapen
cyclacillin	Cyclapen
<b>Extended Spectrum Penicillins</b>	
carbenicillin	Geopen
ticarcillin	Ticar
mezlocillin	Mezlin
azlocillin	Azlin
piperacillin	Pipracil
<b>Penicillins Plus <math>\beta</math>-Lactamase Inhibitors</b>	
For parenteral administration	
ticarcillin-clavulanic acid	Timentin
ampicillin-sulbactam	Unasyn
For oral administration	
amoxicillin-clavulanic acid	Augmentin

\*Inclusion or omission of particular trade products does not imply endorsement or lack of endorsement

Infecting organisms for which penicillin G is the penicillin of choice are shown in Table 2. These primarily include infections caused by the streptococci, Gram-positive bacilli, meningococcus, and spirochetes. Important exceptions are penicillin-insensitive and -resistant pneumococci;<sup>3</sup> a third generation cephalosporin may now be considered empiric therapy of choice for serious pneumococcal infections, pending in vitro susceptibility testing results.

The modern usefulness of procaine penicillin G is limited. Once the mainstay of therapy for gonorrhea, the emergence of gonococcal resistance to penicillin now makes ceftriaxone the  $\beta$ -lactam antibiotic of choice for treatment of gonococcal infections.<sup>4</sup> Most other infections are more conveniently treated with intravenous penicillin.

Benzathine penicillin G remains the mainstay of treatment for syphilis (except neurosyphilis), a primary regimen for treatment of streptococcal pharyngitis, and a primary regimen for streptococcal prophylaxis in individuals with a history of rheumatic fever or in individuals with recurrent streptococcal cellulitis or extensive burn wounds.

Phenoxymethyl penicillin (penicillin V) and phenoxyethyl penicillin are acid stable penicillins for oral administration. Most physicians are familiar with penicillin V, which is generally the preferred of these two agents. Only minor differences in antimicrobial activity between penicillin G and penicillin V exist. Penicillin V is useful for throat, upper respiratory tract, and minor skin infections in doses of 250 mg to 1 gm orally 4 times daily.

### Semisynthetic Penicillinase-Resistant Penicillins (SPRP)

Although the natural penicillins were initially successful in treatment of staphylococcal infections, staphylococci acquired plasmid-transmitted,  $\beta$ -lactamase activity, and it is now rare to encounter a penicillin-sensitive staphylococcus. If such an organism is encountered, specific testing for  $\beta$ -lactamase production should be performed before treatment with penicillin. The SPRP were designed (by the addition of an acyl side chain which sterically inhibits the action of penicillinase by preventing opening of the  $\beta$ -lactam ring) to be effective against penicillinase-producing staphylococci, and this remains the sole area of their primary usefulness. All have adequate activity against group A,  $\beta$ -hemolytic streptococci (*Streptococcus pyogenes*), such that in mixed infections, or in situations (such as cellulitis) in which either staphylococci or these streptococci may



Table 2. Choice of Penicillin Antibiotic for Infections Due to Specific Pathogens\*

Infecting Organism	Penicillin of Choice	Infecting Organism	Penicillin of Choice
<b>Gram-positive cocci</b> <i>Enterococcus faecalis</i> (nonpenicillinase strain) <i>Staphylococcus aureus</i> nonpenicillinase strain penicillinase positive Coagulase-negative staphylococci nonpenicillinase strain penicillinase positive Streptococci group A, B, C, and G viridans streptococci <i>S. bovis</i> <i>S. pneumoniae</i> ** <i>Peptostreptococcus</i>	ampicillin or penicillin G usually + aminoglycoside  penicillin G oxacillin, nafcillin  penicillin G oxacillin, nafcillin  penicillin G penicillin G penicillin G penicillin G penicillin G	<b>Gram-negative bacilli</b> <i>Bacteroides</i> species (non- $\beta$ -lactamase) <i>Citrobacter freundii</i> <i>Eikenella corrodens</i> <i>Enterobacter</i> species† <i>Escherichia coli</i>  <i>Fusobacterium</i> <i>Klebsiella pneumoniae</i> † <i>Leptotrichia buccalis</i> <i>Pasteurella multocida</i> <i>Proteus mirabilis</i> <i>Proteus vulgaris</i> <i>Providencia</i> <i>Pseudomonas aeruginosa</i> ‡  <i>Salmonella</i> non-typhi <i>Serratia</i> ‡ <i>Spirillum minus</i> <i>Streptobacillus moniliformis</i>	penicillin G  ticarcillin, ureidopenicillin ampicillin ureidopenicillin ampicillin, extended spectrum pen§ penicillin G ureidopenicillin penicillin G penicillin G ampicillin extended spectrum pen§ extended spectrum pen§ extended spectrum pen§+ aminoglycoside ampicillin, ticarcillin ureidopenicillin penicillin G penicillin G
<b>Gram-negative cocci</b> <i>Moraxella catarrhalis</i> <i>Haemophilus influenzae</i> $\beta$ -lactamase negative $\beta$ -lactamase positive <i>Neisseria gonorrhoeae</i> ( $\beta$ -lactamase negative)** <i>Neisseria meningitidis</i>	amoxicillin-clavulanic acid  ampicillin amoxicillin-clavulanic acid penicillin G procaine, amoxicillin penicillin G	<b>Other</b> <i>Actinomyces israelii</i> <i>Erysipelothrix</i> <i>Leptospira</i> <i>Treponema pallidum</i>	penicillin G penicillin G penicillin G penicillin G
<b>Gram-positive bacilli</b> <i>Bacillus anthracis</i> <i>Clostridium perfringens</i> <i>C. tetani</i> <i>Listeria monocytogenes</i>	penicillin G penicillin G penicillin G ampicillin plus an aminoglycoside		

\*Adapted from Reference 1.

\*\*A third-generation cephalosporin is more appropriate unless susceptibility is known.

†For some strains resistant to a penicillin, a third-generation cephalosporin or an aminoglycoside should be used.

§An extended spectrum penicillin.

be involved, therapy with one of these agents alone is adequate.

There are now three agents in this group available for parenteral administration for serious staphylococcal infections: methicillin, oxacillin, and nafcillin. There has never been evidence of a difference in therapeutic efficacy among these three agents. Methicillin has been largely abandoned because of a higher incidence of interstitial nephritis<sup>5</sup> and because a trial of high-dose therapy demonstrated fewer adverse reactions with nafcillin therapy;<sup>6</sup> with the price differential now modest, methicillin can be forgotten. Oxacillin is generally preferred by pediatricians because of nafcillin's higher propensity to produce phlebitis. However, oxacillin is perhaps the

most likely of penicillins to cause hepatic injury.<sup>7</sup> Most physicians prefer nafcillin for treatment of serious staphylococcal infections in adults.

Pharmacokinetics definitively favor nafcillin for the treatment of meningitis; it is the most lipophilic and therefore achieves the highest CSF concentrations of the SPRP.<sup>8</sup> An additional pharmacokinetic point of interest with this group is that nafcillin is the only penicillin primarily excreted by hepatic processes; dosage modification in renal insufficiency is not necessary with nafcillin. For serious staphylococcal infections, these drugs are administered in doses of 8-12 gm/day in 4 divided doses.

Cloxacillin and dicloxacillin are the only SPRP that should be used orally. Generally, serum levels of

dicloxacillin are twice those of an identical dose of cloxacillin; easy enough to remember that the bioavailability of "diclox =  $2 \times$  clox." Most physicians prefer to use dicloxacillin. These agents should be reserved for the treatment of minor staphylococcal infections, such as furuncles and carbuncles. Less commonly they are used to complete a course of therapy initiated parenterally. These drugs are commonly underdosed: usual dosage for adults should be 500 mg to 1 gm four times daily.

A significant problem has emerged in the last decade with both *Staphylococcus aureus* and coagulase-negative staphylococci (colloquially called *Staphylococcus epidermidis*) that are resistant to the SPRP agents. Generally, microbiology laboratories test for this by the use of oxacillin, as this agent is more stable in vitro testing, and these organisms are generally referred to as methicillin-resistant staphylococci. It can not be overemphasized that these organisms are not only resistant to all SPRP, but to *all penicillins* and to *all cephalosporins* as well. Treatment of infections due to these organisms currently requires the use of vancomycin with or without additional agents.

### Aminopenicillins (the Ampicillin Family)

The development of the aminopenicillins occurred in response to the need for penicillins with an extended spectrum of activity against aerobic Gram-negative bacilli. Although there are five agents available in this family (Table 1), one need only know about ampicillin and amoxicillin, and this discussion will therefore be limited to these two agents.

The in vitro antimicrobial activity of ampicillin and amoxicillin are essentially the same. Infecting organisms for which one of these agents is the penicillin of choice are shown in Table 2. Ampicillin is about twice as active as penicillin G against enterococci,<sup>9</sup> and is generally preferred for enterococcal infections. Resistance of enterococci to penicillin and ampicillin is emerging and is an important caveat. For serious enterococcal infections with sensitive organisms, combination therapy with ampicillin plus an aminoglycoside is required for a synergistic bactericidal effect. These drugs are also about twice as active as penicillin against  $\beta$ -lactamase negative *Haemophilus influenzae*, but many *H influenzae* are  $\beta$ -lactamase positive; therefore, these agents should only be used after demonstrated in vitro susceptibility in severe *H influenzae* infections. Ampicillin plus an aminoglycoside is preferred treatment for serious *Listeria monocytogenes* infections. The spectrum of activity of these agents against aerobic Gram-nega-

tive bacilli in the 1990s is essentially limited to community-acquired *Escherichia coli*, *Proteus mirabilis*, and *Citrobacter freundii*, and some *Salmonella sp* and *Shigella sp*; generally in vitro susceptibility testing should precede selection of these agents

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**One caveat:  
ampicillin, not amoxicillin,  
is the preferred treatment for  
sensitive shigellosis...**

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for treatment of Gram-negative bacillary infections. It is to be emphasized that these agents have *no* activity against penicillinase-producing (penicillin-resistant) or methicillin-resistant staphylococci.

Amoxicillin is available only for oral administration, so the parenteral form of this family is restricted to ampicillin. For most infections, ampicillin is dosed at 6 to 12 gm/day in 4 divided doses. Pharmacokinetic advantages favor the use of amoxicillin orally: treatment with amoxicillin 250 mg tid is essentially therapeutically equivalent to treatment with ampicillin 500 mg qid and probably is less frequently associated with the development of diarrhea.<sup>10</sup> One caveat: ampicillin, not amoxicillin, is the preferred treatment for sensitive shigellosis, probably due to the fact that the better absorption of amoxicillin is a therapeutic disadvantage in this particular circumstance.

### Extended Spectrum (Antipseudomonal) Penicillins

Five agents comprise this group: two carboxypenicillins (carbenicillin and ticarcillin); and three ureidopenicillins (mezlocillin, azlocillin, and piperacillin). These agents were developed for their enhanced activity against aerobic Gram-negative bacilli, including *Pseudomonas aeruginosa*. Treatment of infections due to *P aeruginosa* or suspected to be due to *P aeruginosa* is the primary indication for the use of an agent of this class. These agents should be used with an aminoglycoside for treatment of serious *P aeruginosa* infections. However, *P aeruginosa* is frequently part of a polymicrobial or mixed infection, and these agents are often used, often with an aminoglycoside, for empiric treatment of infection of unknown source and/or microbial eti-



ology. Thus it is imperative to review other aspects of the spectrum of antimicrobial activity of these agents.

There are differences among these agents, but the similarities are more important than the differences. They can be thought of as "super ampicillins." They do everything that ampicillin does, plus they possess better activity against aerobic Gram-negative bacilli. They still have no activity against penicillin or methicillin-resistant staphylococci. One additional caveat is the marginal activity of carbenicillin and ticarcillin against enterococci. At the high dosages routinely used, these agents all have reasonable activity against anaerobic bacteria, but they are never preferred therapy for this indication alone.

For a variety of reasons, there is no need to consider azlocillin further. A comparison of the in vitro antimicrobial activity of the remaining four agents is shown in Table 3, an adaptation of the original data.<sup>11</sup> The ureidopenicillins have improved activity against nonpseudomonal Gram-negative bacilli and somewhat improved activity against *P aeruginosa*. The agent with the best activity against Gram-negative aerobic bacilli is piperacillin. However, the differences are small and likely variable from institution to institution. Price differentials are

also relatively small, and again, likely to vary among institutions. It is reasonable for each institution or each physician to choose one of the agents, likely a ureidopenicillin, by local patterns of susceptibility and cost and learn that one. I don't believe an unbiased global recommendation in this class is possible.

There are minor pharmacokinetic differences among these agents, but the similarities again dominate. Carbenicillin must be dosed higher (30 gm/day) than the other agents (generally dosed at 3-4 gm q4-6h, ie, 16-18 gm/day).

With the extension of the penicillin family spectrum of activity has come three new toxicities. First is sodium burden. With recommended dosing, carbenicillin contains 141 mEq/d of sodium, ticarcillin 93.6 mEq/d, and mezlocillin and piperacillin 33.3 mEq/d. These drugs can also induce hypokalemia and metabolic alkalosis due to the solvent drag phenomenon: the high concentration of nonabsorbable anions in the distal renal tubule results in potassium and hydrogen ion excretion. Finally, these drugs induce a defect in platelet aggregation that can result in clinically significant bleeding. This is likely less of a problem with the ureidopenicillins than with the carboxypenicillins.<sup>11</sup> One recent report is disturbing:

in a retrospective study of prolonged treatment with high doses of ureidopenicillins, 67.7% of patients experienced some adverse effect.<sup>12</sup>

Let's summarize the clinical use of the extended-spectrum penicillins.<sup>13</sup> One of these agents is indicated in combination with an aminoglycoside for therapy of proven or seriously suspected *P aeruginosa* infections. No drug in this group is generally indicated for single agent therapy of any infection; the development of resistance during therapy is common. These drugs are not indicated as single agents for the empiric treatment of the neutropenic patient with fever. Although of established efficacy in several specific settings of surgical prophylaxis, they performed no better than a far less expensive cefazolin regimen,<sup>11</sup> and therefore are not indicated in this role.

An orally absorbed ester of

**Table 3. In Vitro Activity of Extended Spectrum Penicillins Against Gram-Negative Organisms and Anaerobes\***  
(% strains susceptible to achievable concentrations)

	Carbenicillin	Ticarcillin	Azlocillin	Mezlocillin	Piperacillin
<b>Gram-Negative Organisms</b>					
<i>E. Coli</i>	80	82	82	85	85
<i>Klebsiella</i> species	8	12	50	80	88
<i>Serratia</i> species	76	80	65	75	85
<i>Enterobacter</i> species	70	60	60	90	90
<i>Proteus</i>					
indole positive	80	80	70	85	90
indole negative	100	100	100	100	100
<i>Pseudomonas aeruginosa</i>	80	85	95	80	95
<i>Pseudomonas</i> species	40	40	85	90	97
<b>Anaerobes</b>					
<i>Bacteroides</i>					
<i>fragilis</i> (group)	85	80	90	90	95
<i>fragilis</i>	85	85	95	100	92
<i>Clostridium perfringens</i>	100	100	100	100	100
<i>Clostridium</i> species	81	86	95	95	95
<i>Peptococcus</i> /	92	90	75	95	75
<i>Peptostreptococcus</i>					
<i>Fusobacterium</i>	100	95	95	95	95

\*Adapted from reference 11.



carbenicillin, namely indanyl carbenicillin, is available and had some usefulness only in uncomplicated *P aeruginosa* urinary tract infections. However, this role is now better filled by a fluoroquinolone.

### Penicillins Plus $\beta$ -Lactamase Inhibitors

Clavulanic acid, sulbactam, and tazobactam (to be available in the near future) are  $\beta$ -lactam antibiotics with minimal antibacterial activity. However they bind to staphylococcal  $\beta$ -lactamases, the  $\beta$ -lactamases of *H influenzae*, the  $\beta$ -lactamases of most *Bacteroides* sp, and some  $\beta$ -lactamases of *Enterobacteriaceae*, with a higher affinity than do the useful  $\beta$ -lactam antibiotics. This binding to  $\beta$ -lactamases inhibits the

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***Ampicillin-sulbactam  
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activity of the  $\beta$ -lactamase (in some cases they may actually be destroyed) and thus "protects" the useful  $\beta$ -lactam antibiotic, allowing it to reach its site of activity (penicillin binding proteins) and exert its antibacterial effect.<sup>14</sup> That said then, it is apparent that the addition of a  $\beta$ -lactamase inhibitor to the parent drug extends its usefulness to include infections due to  $\beta$ -lactamase-producing (penicillin-resistant but not methicillin-resistant) staphylococci,  $\beta$ -lactamase-producing *H influenzae*, and  $\beta$ -lactamase-producing *Bacteroides* sp, and broadens the spectrum of activity among aerobic Gram-negative bacilli, most notably *E coli* and *Klebsiella* sp (not *P aeruginosa*).

It is perhaps easiest to define the clinical usefulness of the oldest of these agents, amoxicillin-clavulanic acid. This drug is useful in infections of the paranasal sinuses and in otitis media and bronchitis, infections in which *Streptococcus pyogenes*, *Streptococcus pneumoniae*, *H influenzae*, and occasionally *Staphylococcus aureus* are dominant.<sup>1</sup> In this market niche, it would then be in competition with second- and third-generation cephalosporins, new macrolide antibiotics, and remotely the fluoroquinolones. Dollars for achievement, it fares well in this competition. It is also a treatment of choice for human-bite and

animal-bite infections in which *Pasteurella multocida*, streptococci, staphylococci, anaerobes, and *Eikenella corrodens* are dominant pathogens.<sup>15</sup>

To define the role of ampicillin-sulbactam and ticarcillin-clavulanic acid is difficult. These are useful drugs in a variety of settings. The short form of the story is to state that when one gets involved with multidrug therapy to treat a polymicrobial infection, it is useful to consider if one of these agents could be used with greater ease, less toxicity, and less expense. That certainly is vague, but although I'll provide some slightly more concrete guidelines next, I believe that is the dominant usefulness of these agents.

Ampicillin-sulbactam can be viewed, in one sense, as an intravenous form of amoxicillin-clavulanic acid. This is not quite correct technically, but it is a useful beginning. It is therefore indicated in more serious forms of the same infections, or for patients with these infections who can not tolerate oral therapy. It can be primarily viewed as ampicillin activity plus activity against methicillin-susceptible staphylococci plus better activity against anaerobic Gram-negative bacilli (added to ampicillin's excellent activity against anaerobic Gram-positive bacteria). It and ticarcillin-clavulanic acid are excellent agents for anaerobic infections. The activity of ampicillin-sulbactam against aerobic Gram-negative bacteria of gastrointestinal tract origin, in my view, is inadequate to recommend its use as a single agent in polymicrobial infections whose origin is the fecal stream.

The activity of ticarcillin-clavulanic acid against aerobic Gram-negative bacilli is superior to that of ampicillin-sulbactam, but still inferior to the activity of the primary aminoglycosides, some third-generation cephalosporins, aztreonam, imipenem, or some fluoroquinolones. Another important caveat: the activity of this combination against *P aeruginosa* is not improved over ticarcillin. Therefore, if this drug is used for *P aeruginosa* infections, 16-18 gm/day of the ticarcillin component must be administered, not the usually recommended 12 gm/day. An exact role for this drug also remains unclear. It is useful in replacing some combination therapy regimens.

### The Future

Although currently available penicillins provide excellent therapy for a vast array of infectious diseases, the search for additional penicillin antibiotics with new uses continues. New agents currently under investigation include temocillin, apalcillin, and foramdinocillin.<sup>1</sup> A combination of piperacillin and

tazobactam (a  $\beta$ -lactamase inhibitor) may soon be marketed. The search for the perfect penicillin will likely continue for many years. J

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# Review of After-Hours Telephone Contacts of an Ambulatory Internal Medicine Clinic

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Little is known about the after-hours calls in internal medicine practice. This study attempts to determine who calls, why they call, and what happens as a result of after-hours telephone calls to an internal medicine teaching clinic.

Between March 1, 1990, and March 25, 1990, a prospective concurrent review of the call record, the clinic chart, the emergency room encounter, and interviews with the patients placing the call and the resident receiving the call was conducted in a freestanding practice-model internal medicine teaching clinic.

There were 133 after-hours telephone contacts. Forty-five percent of the calls were made by patients calling more than once. Seventy-two percent of the callers were younger than 50, and 70% were female. Seventy-six percent of calls concerned established problems for which the patient had been seen in the clinic. The most common diagnostic categories were endocrine (18%), gastrointestinal (18%), and cardiovascular (16%). Anxiety was recognized in 62% of calls. Anxiety and pain or discomfort were recognized as the primary problem in 47% of calls. While most calls were considered appropriate, problems for anxiety alone were considered inappropriate in 25% of calls. The most common recommendation made to the after-hours caller was to take a prescribed medication and schedule a clinic visit (31%).

The most frequent user of the after-hours telephone medical system is a female caller under the age of 50 who calls in the early evening about an established problem. The caller usually expresses anxiety, has made other after-hours calls, and has recently been seen by a physician for a related problem.

The after-hours call is a patient request for care which occurs outside office hours.<sup>1</sup> While many reports address the knowledge, attitudes, and skills of the doctor-patient encounter, little emphasis has been focused on the intricacies of the telephone interaction between patient and physician.<sup>2</sup>

Less time has been devoted to the medical education and preparation of the physician for the task of telephone medicine.<sup>3</sup> It has been estimated that between 11% and 50% of all medical contacts occur after hours.<sup>4,5</sup> Telephone contacts have been evaluated in a number of disciplines, including pediatrics, family medicine, and emergency medicine.<sup>5-12</sup> Curtis and Talbot estimated that 25% of the patient contacts of a third-year family medicine resident occur via telephone.<sup>8</sup> Although the calls to an internal medicine private practice have been evaluated, the characteristics and outcomes of after-hours calls to an internal medicine teaching clinic have not been described.<sup>3</sup>

This review of after-hours contacts was designed and conducted to determine the nature and outcome of after-hours telephone calls to an internal medicine teaching clinic. This analysis will enable us to devise a program of education and implement the changes

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necessary to equip the physician-in-training with the knowledge, skills, and attitudes needed to more effectively manage this common encounter.

## Methods

The Adult Medicine Clinic is a freestanding ambulatory teaching clinic of the University of Oklahoma College of Medicine—Tulsa. The forty-eight residents and nine full-time faculty members of the Department of Internal Medicine serve a clinic population of approximately 6,000 patients who average 15,000 visits per year. Internal medicine residents on a month-long block rotation in the ambulatory adult medicine clinic respond to night and weekend telephone requests for medical care from the teaching clinic patients. From 1700 to 0800 on weekdays, and from 1700 on Fridays until 0800 on Mondays, the clinic receptionist forwards all incoming calls to an answering service where the time of the call, the caller's name and telephone number, and the reason for the call are recorded. The answering service relays the information to the resident on call, who in turn contacts the caller directly. No triage occurs prior to the resident-patient contact. Faculty provide backup support for the on-call resident. All calls are reviewed by a faculty member the following workday.

Three PG-1 residents and one PG-3 resident assigned to ambulatory block rotation were asked to document specific aspects of each call when they responded to the after-hours request for medical care. The residents were asked to record the date and time of the call and, using a forced list of choices, to categorize the reason for the patient call, the recommendation given, the working diagnosis, and the resident's emotional response. Dr. John Destito interviewed the emergency room staff to document their assessment of the patient and the recommendations given. The researcher also interviewed the patient by telephone, to document compliance and outcome. An independent chart review of the clinic record was conducted by the researcher to determine the timing of previous office visits and to correlate telephone-reported problems with established diagnoses on problem lists in the chart. All after-hours telephone contacts to the Adult Medicine Clinic were reviewed over a 25-day period, March 1 to March 25, 1910.

## Results

The characteristics of the after-hours callers are shown in Table 1. The average caller was a 50-year-old female. Male callers were of similar age, 47. Most

callers had recent contact with the clinic physicians. During the study period, 45% of patients called more than once, with 26% having called within the previous 24 hours. Seventy-one percent had made clinic visits within the preceding thirty days. A minority of callers (11%) had been referred to the clinic from the hospital or emergency rooms and had not yet become established clinic patients.

Nearly half (44%) of the calls were received during week nights. Most calls were received before midnight: during the week, 75% of calls were received between 5 PM and midnight, with 19% of the calls received between 6 and 7 PM. On weekends, 65% of calls were received before 5 PM, 25% between 5 PM and midnight, and only 10% of calls after midnight.

The problems reported by patients are characterized in Table 2. The majority of patients (76%) called regarding ongoing, established problems. New problems were described by 18% of patients, and 6% of problems were undefined. The most common problem was endocrine (18%), usually related to diabetes. Also common were diseases or symptoms related to the gastrointestinal tract (18%), such as GI bleeding, dyspepsia, vomiting, or diarrhea; the cardiovascular system (16%), such as chest pain, heart failure, or hypertension; and the musculoskeletal system (16%), such as arthralgias, back pain, or headache.

The residents' evaluation of calls revealed that anxiety and pain or discomfort were primary problems for 47% of patients. Anxiety alone was encountered in 15% of calls and pain or discomfort alone in 18%. Sixty-two percent of calls had an anxiety component. The residents believed that drug-seeking was the primary purpose of 8% of calls. Most calls (79%) were considered "appropriate" by the residents; however, nearly all calls related to drug-seeking, admin-

Table 1. Characteristics of Patients Calling After Hours (N=133)

<b>Sex</b>	
Male	42 (30%)
Female	91 (70%)
<b>Mean Age, y</b>	
Male	47
Female	50
<b>Prior Contacts</b>	
More than one phone call during study period	45%
Phone call during previous 24 hours	26%
Clinic visit during previous 30 days	71%
No prior clinic visit	11%

istrative questions, or misdirected calls for other clinics were considered "inappropriate." All calls concerning pain or discomfort were considered "appropriate" but 25% of calls concerning anxiety alone were thought to be "inappropriate."

Resident recommendations to patients are described in Table 3. Junior residents tended to refer patients to the emergency room more often than senior level residents. Seventy-seven percent of patients followed the instructions given by the physician.

## Discussion

Given the understanding that a study of one month's duration, a relatively small sample size, and a small representation of our resident physicians are potential weaknesses of this project, we believe that our results reveal important new information about after-hours telephone calls to an internal medicine teaching clinic.

The typical after-hours caller, representative of the population of patients in our internal medicine practice, was a middle-aged female with recognized chronic conditions. In addition, the most common medical conditions of our callers were similar to the most common diagnoses found in internal medicine practices.<sup>13</sup> In contrast, the majority of calls to pediatricians and family practitioners were regarding new or acute problems.<sup>3,10</sup> In a family practice setting, Koffman and Merritt found that 70% of calls were regarding new problems or symptoms, while 30% of

calls were regarding problems of a chronic or continuing nature.<sup>10</sup>

Given that the internist's patient population is older and more likely to have chronic illnesses, one might expect the number and types of calls to differ from those in other specialties.<sup>13</sup> Evaluating the calls to a faculty practice of general internal medicine, Johnson and Johnson found that 61% of calls dealt with a chronic condition.<sup>3</sup> In our study, a similar 76% of calls were about chronic problems.

In an evaluation of a family practice setting, Villareal found that frequent users placed 25% of the calls.<sup>7</sup> Nearly half (45%) of our callers phoned more than once and most callers had recent contact with a clinic physician. The reasons for the multiple after-visit calls are unclear. Contributing factors may include the chronicity of medical problems in our population, inadequate patient education, ineffective problem-solving over the phone, or insufficient follow-up.<sup>3,13</sup> Also, the frequent caller may have had agenda items that remained hidden from the physician or were incompletely addressed. Talbott stresses the importance of identifying hidden agenda items and recognizing the signal behaviors, wherein the patient may present a medically acceptable symptom in order to offer the physician the opportunity to uncover a more important "problem of living."<sup>1</sup> Failure to identify and address the patient's true agenda results in unresolved problems and may contribute to more frequent calls.

Approximately one caller in ten was not an established clinic patient. They entered the teaching practice as uncommitted patients presenting to the hospital. When discharged from the hospital or emergency room, these patients were referred to the clinic with follow-up appointments within one day to a few weeks. While it is difficult to characterize this small group of patients, they may have left the hospital with unanswered questions or unclear expectations about their treatment, medications, condition, or

**Table 2. Characteristics of Patient Problems (N=133)**

Established problems	76%
New problems	18%
Undefined	6%
<b>Diagnosis Categories</b>	
Endocrine	18%
Gastrointestinal	18%
Cardiovascular	16%
Musculoskeletal/rheumatologic	16%
Respiratory	6%
Substance abuse	5%
Immunologic	4%
Psychiatric	3%
Neurologic	3%
Cancer	3%
Genitourinary	2%
Dermatology	2%
Trauma	1%
Other	3%

**Table 3. Resident Recommendations to Patients**

1. Advice alone	8%
2. Medication prescription	9%
3. Clinic visit	8%
4. Medication prescription/clinic visit	31%
5. Emergency room referral	26%
6. Emergency room referral if medication prescription fails	5%
7. No recommendation/call not applicable	13%



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prognosis. For the anxious or uncomfortable patient, the period of time prior to their first office visit may be particularly distressing. Improved discharge planning or earlier clinic contact may impact the frequency of these calls.

The time of our calls is similar to other reviews.<sup>3,7</sup> Nearly half of the calls were received during week nights. One quarter of calls were received after midnight. Consistent with evaluations of other practices, this finding is reassuring to the on-call physician who can expect few nighttime interruptions.<sup>3,7</sup> Doctors and patients may have differing expectations for the outcome of calls. Curtis found that "a significant number of the patients were looking for reassurance and advice... but the doctor thought the patients

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### *The anxiety of the caller must be explicitly addressed by the physician.*

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wanted diagnosis."<sup>14</sup> More than 30% of patients in Talbott's study felt the doctor did not address the main reason for the call.<sup>1</sup> Sloane and colleagues proposed that the management process was the primary objective in telephone decision making, with the diagnosis needing only to be sufficiently precise to guide immediate management decisions.<sup>5</sup>

Consistent with this recommendation, Johnson and Johnson found that two-thirds of their phone calls resulted in discussion or reassurance only.<sup>3</sup> In those cases, the doctors were able to assess the complaint and arrive at a resolution without resorting to additional tests, appointments, or medicines.<sup>3,5</sup> Curtis interviewed the after-hours callers and found that 49% of patients considered reassurance more important than relief of symptoms.<sup>1</sup>

Two-thirds of our patients called because of anxiety and pain or discomfort. Similarly, Curtis and Talbott found that 48% of their patients called about pain or discomfort, while 40% called about anxiety related to a problem.<sup>1</sup> Patients who make after-hours calls are frequently anxious, and anxiety is commonly associated with complaints of pain and discomfort.

One quarter of our calls due to anxiety were considered "inappropriate" by the residents. The reasons are unclear. Koffman and Merritt suggest that

doctors consider patient complaints of pain or discomfort more seriously than complaints of anxiety.<sup>10</sup>

Physician recommendations from the telephone contact have been examined in a number of practice settings.<sup>3,8,9</sup> Curtis estimated that 72% of after-hours calls could be handled by the physician with telephone contact alone.<sup>1</sup> Similarly, 70% of our calls were handled over the phone by giving advice, prescribing a medication, or recommending an office visit. Compared to the faculty practice studied by Johnson and Johnson, our residents' recommendations included a medication more often, 45% compared to 22%.<sup>3</sup> Reasons for this pattern are unclear but may represent the resident physician's inexperience or lack of confidence in providing reassurance alone.

Like many group practices, continuity of care is emphasized but the doctor on call is often not the patient's own physician. In the teaching clinic call system, patients referred to the hospital emergency room are evaluated by the hospital team, not by the referring resident physician taking after-hours calls for the clinic practice. It is unclear if this separation of duties influences recommendations and referral patterns. However, in the practice setting evaluated by Villareal and colleagues, the pediatric resident on phone call more frequently requested that the patient be seen by a physician rather than determining whether the problem could be managed at home.<sup>7</sup>

### **Conclusion**

The work of Caplan and Tangerose stated that telephone medicine was the greatest personal problem in 30% to 36% of polled physicians.<sup>15</sup> Housestaff should, as previous reviews have suggested, develop assessment skills necessary to make appropriate management decisions over the telephone. For this reason, after-hours care and telephone medicine must be viewed as areas of focus in medical education. Talbot proposed that the medical educator must facilitate learning in areas of specific medical and social problems, communication skills, telephone diagnostic skills, clinical uncertainty, illness behavior, and the physician's own emotional responses to patient requests when the clinic is closed.<sup>8</sup> As a result of our review of after-hours contacts, we are able to make several specific recommendations for practice, to improve educational programs, and promote further study.

First, hospital follow-ups must be made in a prompt and timely manner. Clinic appointments made for no later than one to five days after hospital discharge might alleviate the after-hours calls from non-estab-



lished clinic patients. In their weekly continuity clinic, residents in our program, while assigned to hospital services, will have two protected appointment slots for hospital follow-up visits. In a university clinic setting such as ours, appointments with non-physician clinicians prior to the initial face-to-face physician appointment might be utilized to ensure timely follow-up in the outpatient setting. For example, the newly diagnosed diabetic patient who may not be able to be scheduled for a follow-up clinic visit until one week after hospital discharge may be scheduled for appointments with the diabetic nurse or educator at an earlier time.

Frequent callers, particularly those with established chronic diseases, might be identified and given more frequent clinic visits or regular calls by a physician or nurse. In addition, visits for patients with chronic diseases might include a discussion between the physician and patient in which common problems related to the specific illness, patient distress, pain, discomfort, and anxiety, are anticipated, and options for dealing with those problems are discussed. To reduce the frequency of repeat calls, the physician or nurse might consider contacting the patient within 24 hours of the after-hours interaction.

The preparation of resident physicians to provide telephone medical care is an area of medical education in the early stages of formal development. This process must include not only teaching in the areas of common chronic diseases but also techniques for assessing and treating these chronic diseases by phone. In addition, resident learning may be facilitated by implementing a formal daily review of after-hours calls by resident and faculty.

Finally, the anxiety of the caller must be explicitly addressed by the physician. Since anxiety issues are still not widely viewed as having the same importance as other medical illnesses, training of resident physicians in the recognition, evaluation, and management of patient anxiety during the telephone contact is essential. By recognizing and validating the patient's anxiety and providing appropriate reassurance, the physician may help to relieve the patient's fears.

Although the types of calls may differ, the after-hours telephone request for medical care is a common part of the practice of both the resident physician and the private practitioner. Many calls may be anticipated and specific interventions may be implemented to diminish their frequency. We plan to follow up the conclusions of this initial study by implementing the recommendations and evaluating their impact throughout our residency program.

Medical education programs must focus on telephone medicine to prepare resident physicians for effective service. The telephone medical interaction is an area of medicine in which the effective physician must develop and refine the skills to diagnose, negotiate, and treat the patient who is only heard and not seen.

#### Acknowledgement

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# On the Making of Compost: Medicine in Perspective

J.M. Pontious, MD

*The process has been going on for long before I came and will continue long after I leave.*

**A**pril 28, 1992—Almost two years ago I decided to learn about compost. It started as a simple answer to a simple problem: there were plenty of leaves and clippings around, and the flower beds needed help. My family and I live in a wooded area and have an abundant amount of organic material. A compost pile should be the answer to my problem.

*I entered the medical profession with eyes full of hope. After all, I was the product of the 70's. This type of approach was to be expected of me. I endured a medical education maze and survived. My medical education has been a quite uneventful pilgrimage. Sure, physiology was not my strength, but I persevered in spite of it. I envision myself as having skills in seeing the "big picture," and I do not do well with minutia. Yet, all in all, medicine has kept me enamored but also frustrated.*

If you go to the library to read about compost, you can find volumes dedicated to this art form. Most authors feel that the real skill in composting is in taking one's time and not becoming hurried in the process. After investing in some fencing material and four fence posts, I set up the compost bin. From there, I layered in dried leaves, alternating with sandy soil, and sprinkled the whole affair with fertilizer and a "technically superior enzyme."

*Organized medicine has always interested me, and I have maintained a marginally active status since graduating from medical school. Were you to ask me to verbalize the reason for this, I would mutter something about duty or the grand tradition of medicine. More than once I have observed that the medical society involved an assortment of "graying heads." Was this group pertinent to what was going on in mainstream medicine?*

After you layer each component of the compost, it is important to watch the heat of the decomposing material. Evidently heat hastens the breakdown of the components, as the enzyme must be activated and the organic material fuels the process. Even in the dead of winter this process will generate a significant amount of heat, enough to destroy the germinating ability of any seeds present in the components.

*For some reason beyond my comprehension, I find myself as an alternate delegate to the state medical association. When another physician could not find coverage, it fell to me to represent the physicians of my community at the state meeting. I am not pleased about this turn of events. Here I am, a confirmed cynic about organized medicine, very deep within the internal workings of this system. Here I am, expected to participate in the politics of organized medicine. I am truly out of my element.*

A compost pile, if it is genuinely to work, must be "turned." Now there is some disagreement around this issue because you can find other investigators who feel this "turning" is not necessary and, if left alone, the compost will do as well. The original

Direct correspondence to J. Michael Pontious, MD, 620 South Madison, #304, Enid, OK 73701.

supporters of "turning" seem to have a large following, and since I am swayed by their logic, I subscribe to the "turning" school of composting. It is my sense that "turning" hastens the process. But I have found there are additional benefits in this approach. The "turning" allows me retreat from the world of problems and concerns that typically surround me. This allows me to retreat into that corner of my yard, away from the phone, away from the kids, and away from the TV. Here I carefully remove the rotting material, pile it on a mound, add new layers of leaves and grass clippings, and layer the material I have just removed back into the process. It really is a glorious example of the life cycle at its best.

*There are a number of inconsistencies happening almost simultaneously in the "House of Medicine." It strikes me as odd that on the one hand rates for our own health insurance must increase as the cost of health care is accelerating. The problem, it seems, is that the practice of "professional courtesy" is no longer in fashion. A moment later, in a reference committee, there is a hostile set of comments about the controls and limitations that are being inflicted on physicians, or that poor compensation is typical of Program X. Everyone mumbles in agreement. Can we really have it both ways? At last count, 30% of our state's population isn't covered by health insurance, period. There were no discussions about the problems of access; this did not seem to be on the agenda.*

My brother-in-law recently delivered a trailer load of cattle manure, which was dumped in the general vicinity of my compost pile. My wife nearly left me over this, but research had indicated that manure was tremendously important in the production of quality compost. Bacterial degradation from the manure would speed the process and improve the

quality of the product. My wife continued to be skeptical. She had been raised on a wheat farm in north central Oklahoma, had a master's degree in bacteriology, and practices medicine also. She knows what manure is. She worried about what the neighbors would think when manure was piled on our backyard. The quality of the end product was lost on her. She values productive flower beds, but is not convinced this is the way to obtain quality flower beds.

*I am told that the "new AMA" will lead the House of Medicine into the 21st Century. The elections for AMA delegates and their alternates went fairly smoothly. There was no name calling or evidence of scam in the process. It was the previous year's representatives who were reelected. I really would like to know how the "new AMA" is going to be "new" if the same delegates and elected representatives maintain their position and attitude. Where does the "new" come in?*

The physical exertion I give in caring for my compost is good for me in more ways than might be evident. There is something intellectually pleasing about working with basic materials and hastening the breakdown of these components into a more useful end product. It would be callous of me to assume that it was my physical exertion that made the process proceed, for the process has been going on for long before I came and will continue long after I leave. Maybe my role as the caretaker of the compost has been a wasted effort... J

#### The Author

J. Michael Pontious, MD, is assistant professor, University of Oklahoma Department of Family Practice, and program director, University of Oklahoma/Enid Family Medicine. He is certified by the American Board of Family Practice.



## Douglas Voth becomes executive dean of OU College of Medicine

Dr. Douglas Voth has been appointed executive dean of the College of Medicine at the University of Oklahoma Health Sciences Center (OUHSC) in Oklahoma City. The announcement was made November 10 at the OU Regents' monthly meeting.

Dr. Voth's three-year-term officially began November 11, 1992. He has served as interim executive dean of the college since August 1.

"Dr. Voth has done an excellent job of providing academic and administrative leadership to the OU College of Medicine since August 1," said Dr. Jay Stein, senior vice president and provost of OUHSC. "He brings to the position a vast knowledge of the OU Health Sciences Center and the Oklahoma Health Center, and I am delighted that he has accepted this challenging position."

Dr. Voth has been a professor of medicine at OUHSC since 1987. He became a professor of neurology in 1990. He received his medical degree from the University of Kansas School of Medicine, and did his

internship and residency training in internal medicine at Kansas University Medical Center in Kansas City. His fellowship training in infectious diseases was done at the State University of New York, Upstate Medical Center in Syracuse.

From 1965 to 1973, Dr. Voth was on the medical faculty at the KU Medical Center in Kansas City. From 1973 to 1974, he was a professor of medicine and of family practice and community health at the OU colleges of medicine and public health. In 1974 he returned to Kansas as professor and the first full-time chair in the Department of Medicine, and director of the residency program at the KU School of Medicine-Wichita—positions he held until 1984. He served in a dual appointment as adjunct professor of health education at Wichita State University from 1975 to 1977.

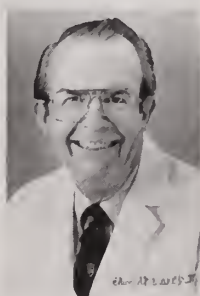
Dr. Voth has been a member of various professional and civic committees, and has received numerous honors in the medical profession. □

## Brandt named first recipient of AAFP's national public health award

Edward N. Brandt Jr., MD, former dean of the University of Oklahoma College of Medicine, has been named the first recipient of the "Excellence in Public Health Award" given by the American Academy of Family Physicians (AAFP).

The award was established to recognize an individual who has made an extraordinary contribution to the nation's public health. Dr. Brandt, now co-director of the Center for Health Policy at the OU Colleges of Medicine and Public Health, received the award October 15 at the organization's 44th Annual Scientific Assembly in San Diego.

Dr. Brandt was assistant secretary for health of



Dr. Brandt

the US Department of Health and Human Services from 1981 to 1984 and also served as acting surgeon general in 1981.

During his tenure at the national level, Dr. Brandt was one of the first to recognize and confront the challenge of HIV infection and AIDS. He was a founding co-chairman of the National Leadership Coalition on AIDS and was active in promoting the establishment of research, educational, and prevention programs concerning AIDS.

"Dr. Brandt also has been very distinguished in public health work in the areas of epidemiology and women's health care issues," said Dr. William Bernhardt, a member of the local AAFP chapter, who was instrumental in nominating Dr. Brandt for the award. "In fact, he was probably the first national

(continued)

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## Attorneys predict hospitals will assume tasks of today's medical staffs

*Submitted by William O. Coleman, MD, chairman of the OSMA-HMSS, the following story first appeared in the November 1992 Medical Staff Legal Advisor:*

Some startling predictions about the future of the medical staff were made at the July meeting of the American Academy of Hospital Attorneys. The written script of a program on medical staff bylaws presented by Nathan Hershey and Jack Schroeder described the hospital/medical staff relationship as "ridiculous," given that the hospital furnished the facility and personnel to physicians and is subject to physicians' "petulant" threats to leave the hospital.

"As one-sided and bizarre as the foregoing ap-

pears," the authors stated, "to add insult to injury the Joint Commission on Accreditation of Healthcare Organizations, and the law in some states, expects the hospital to grant all sorts of procedural safeguards to physicians...." The authors predict that this will soon change: "The time is rapidly approaching when the medical staff, as it is generally understood today, would be no more." Eventually, they state, the hospital "will reassert control over tasks and responsibilities delegated in a general manner to the medical staff, and parcel them out directly to particular physicians administratively responsible to the hospital chief executive and the board." Ultimately, hospitals will be "loosed from the shackles" of medical staff self-governance.

Aside from being intensely inflammatory, these predictions reflect a fundamental misunderstanding of the role of the medical staff in the hospital. Although the hospital retains ultimate legal responsibility for decisions in areas such as credentialing, the hospital cannot assume responsibility for functions it is not qualified to perform. *Only the medical staff can uphold quality of care through peer review.* State laws, the federal Health Care Quality Improvement Act of 1986 and the standards of the Joint Commission on Accreditation of Healthcare Organizations recognize this fundamental principle. Similarly, the AMA and the American Hospital Association recognized, in 1985, that the hospital board typically is not qualified to evaluate quality, and therefore relies on the assessments of its medical staff.

The Joint Commission stated it best in 1960: "Only physicians are capable of judging what is or what is not good medical practice. Patients and hospital personnel may learn to recognize good practice, but only the physician can accurately evaluate its quality." The Joint commission has also stated that to uphold quality of care, "it is incumbent on every medical staff to be self-appraising and self-regulatory." □

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## Brandt receives award (continued)

official to really promote women's health issues, also."


Dr. Bernhardt said competition for the honor was steep, with nominees selected from all 50 states, the District of Columbia, the Virgin Islands, and Puerto Rico. "I think it's a real tribute to Oklahoma to have someone as distinguished as Dr. Brandt working in the state's higher education system," he added.

Dr. Brandt is a native of Oklahoma. He received a bachelor's degree in mathematics from OU, his master's degree in mathematics from Oklahoma State University, and his MD degree from OU in 1960. He served in various capacities at the OU Health Sciences Center from 1956 to 1970 and was on the faculty at the University of Texas Medical Branch at Galveston from 1970 to 1977. From 1977 to 1981, he was vice chancellor for health affairs for the University of Texas System Administration in Austin.

Dr. Brandt served at the national level from 1981 to 1984 and then was appointed chancellor and president of the University of Maryland at Baltimore from 1985 to 1989. In 1989, he moved back to Oklahoma and became executive dean of the OU College of Medicine in Oklahoma City. In August of 1992, he accepted his present position at the OU College of Public Health. Dr. Brandt also is a professor in the Department of Health Administration and Policy, clinical professor in the Department of Medicine, adjunct professor in the Department of Biostatistics and Epidemiology, and adjunct professor in the Department of Family Medicine at the OU Health Sciences Center in Oklahoma City. □

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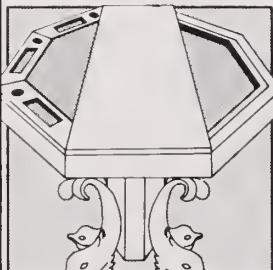
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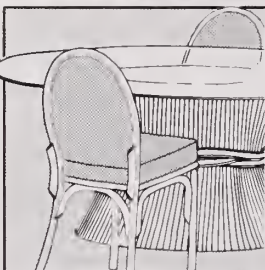
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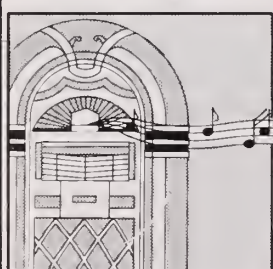
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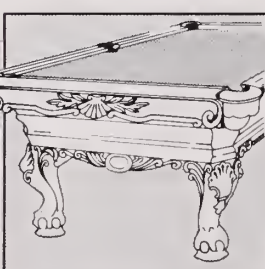
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## Oklahoma State Department of Health

### Tuberculosis making a comeback, especially among HIV-infected

Tuberculosis, once considered eradicable in the United States, has recently been increasing, primarily due to new cases occurring among HIV-infected persons. In Oklahoma in 1991, at least one-fourth of 20- to 49-year-old males with tuberculosis also had concurrent HIV infection. Because HIV co-infection makes tuberculosis more rapidly progressive and difficult to treat, all tuberculosis patients should be offered HIV testing.

The converse is also true: All HIV-infected persons should be skin tested for tuberculosis, with appropriate controls placed, as part of their initial medical evaluation. Anyone who has a persistent cough should also have their sputum examined for acid fast bacilli and cultured for *Mycobacterium tuberculosis*. Tuberculosis will be diagnosed late if HIV-infected patients are assumed to be coughing and losing weight for other reasons. This can result in transmission to health care workers; in one recent study, over 50% of the workers on an AIDS ward became skin test positive.

The risk to health care workers from undiagnosed tuberculosis patients is also increased because of multidrug-resistant tuberculosis (MDRTB). These are strains resistant to isoniazid and rifampin; one case has already occurred in Oklahoma. Because these two drugs are the mainstay of tuberculosis therapy, MDRTB is difficult to treat; HIV-infected persons may never clear their sputum. No established protocols for prophylactic therapy for MDRTB exist.

Because of these risks, hospitalized TB cases and suspects, as well as HIV-infected persons with a cough, should be placed in a room with negative air flow, that is, air flow in through the door and out through a filtered vent or a window, until proven noninfected. Further, such patients and their health care workers should consider using disposable particulate respirators, which have been approved by NIOSH for dust and mist protection and will also filter out tuberculosis droplet nuclei from the air.

As a reminder, tuberculosis is reportable in Oklahoma, and OSDH will provide free tuberculosis medications for all patients who need it. For any questions about tuberculosis, including transmission, health



care worker guidelines, or MDRTB, please call the OSDH Tuberculosis Program at 405/271-4060.

AIDS reporting is important both because federal funds for the state are tied to the number of reported cases, and to help track the epidemic. In Oklahoma there have been an increasing number of HIV infections attributed to heterosexual transmission, as well as an even larger increase in patients for whom no risk factor can be identified. To better understand HIV transmission in Oklahoma, the Oklahoma State Department of Health will be contacting providers of such patients to determine if any risk factors for transmission were present. If none can be determined, we will ask providers if we can contact their patients to try to elicit more information. For more information on this study, please call the OSDH STD/HIV Division at 405/271-4636. □

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## REACTION TIME

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### Weil replies to Falcone's 'State Health Care Reform' response

After reading David Falcone's recent commentary in the November 1992 issue of this journal, one is reminded that not even conceptually is it possible anywhere in the world to implement a perfect health care delivery system. This is aside from the practical realities that providers usually demonstrate some self interest. Each model we could examine would seem to have benefits and curses, but always a key question we should ask is: what should we be willing in the United States to compromise? Should we be willing to jeopardize universal access, social equity, cost containment, or the delivery of quality health care services?

These objectives seem to be more readily accomplished in the United States, as this author has alluded to earlier,<sup>1</sup> with an incremental approach that evolves into a macromanaged, German-type pluralistic system. With this strategy the federal government sets health care policies and priorities, and there are state-by-state budgetary allocations for the delivery of health care services. The actual setting of reimbursement rates within these federal-state global budget amounts could be negotiated on the state level, as in Germany, by the third-party payers without direct governmental intervention.

(continued on page 602)

### George Caarreiro dos Santos, MD 1917 - 1992

OSMA Life Member George C. dos Santos, MD, Henryetta, died October 12, 1992. Dr. dos Santos, a 1942 graduate of the Science Faculty, University Coimbra Portugal, was born in New Bedford, Mass. He completed his postgraduate training in San Diego, Calif. He served as a general surgeon in Korea from 1953 to 1955 and was Chief of Surgery and Hospital Commander with the US Army Medical Corps from 1956 to 1976. Dr. dos Santos then spent five years in the Civil Service in the US Army hospital in Fort Sill before starting a part-time general practice in Henryetta. He retired in 1987. □

### IN MEMORIAM

#### 1992

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Joseph Reid Henke, MD	September 28
Charles Morris Gunn, MD	October 10
George C. dos Santos, MD	October 12



Physicians under such a proposed plan for the US could continue to be reimbursed on a fee-for-service basis without most existing managed care approaches. Our current micromanagement of health care services continues to hassle physicians and leads proportionately to enormous amounts of paperwork that adds little to the quality of patient care provided in the US.

Falcone, as the title of his presentation, "State Health Care Reform," suggests, proposes that we proceed with more state-by-state health reform experiments. This where we differ for a number of reasons as now will be briefly outlined:

First, individual states have historically been unable or unwilling to provide universal access to their residents. This may be primarily because health care already represents 13% of most states' disposable income, and therefore providing universal access imposes on their business community a potentially unfair competitive position in comparison to states that could provide far less benefits.

Second, most states are currently strapped for revenues to meet their existing obligations and for some time have been unable to assure social equity in

their primary, secondary, and higher education systems. Therefore, how could residents of a state be assured that these discrepancies would not continue in their health care system?

Third, the experience with state rate-setting in overall hospital cost containment during the past several decades is rather mixed.<sup>2</sup> In fact, recent evidence suggests that the reimbursement incentives established in these states increase inpatient rather than ambulatory care services.

Fourth, the state administered Medicaid programs are certainly not illustrative of uniformly providing high quality health care services. The weight of most of the evidence is that the opposite is too frequently the case.

Fifth, the state-sponsored health reform plans enacted to date in Massachusetts, Minnesota, Florida, Oregon, and Vermont, although some are rather innovative, certainly cannot be considered based on their current experience as models for others to follow. A major hurdle for them is simply to obtain a Medicaid waiver from the US Department of Health and Human Services.

An obvious exception to this is Hawaii, which has

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two competing not-for-profit health insurance plans with community-rated premiums—Blue Cross/Blue Shield and Kaiser Permanente—and a long tradition of social solidarity among its residents.

For these above reasons, I need to take exception with Falcone that the wave of the future should be with more state health reform experimentation.

Again a call is made first for some national leadership to set the parameters of a reformed health care delivery system. This view is consistent with the Canadian and the German models, and what could be accomplished in the United States—wherein each state within the federal guidelines could tailor its delivery system to its specific needs and its available resources.

—Thomas P. Weil, PhD  
Asheville, NC

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## Quackery: The Modern Highwayman

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This find the sick, when (time and patience  
gone)*

*Death with a tenfold terror hurries on.*

—Crabbe<sup>1</sup>

When I was a child several of my relatives migrated from Oklahoma to California, there to seek work, better living, and, they hoped, a kinder existence. During those depression years, and after the sale or disposal of almost everything, this move involved travel from flat tire to blowout and from one breakdown to another along the two-lane asphalt trail that was US 66. One pair of these relatives, an older couple, wrecked their automobile on a lonely stretch of desert highway. The wife was thrown clear and knocked unconscious, while the husband remained conscious but was pinned beneath the wreckage. Within minutes a car stopped, two Samaritans (or so he thought) came running to their aid and asked if they could help; seeing their predicament, one of them, over his protestations, searched his pockets and lifted his wallet and pocket watch. The other one went to his wife, removed her wedding ring, and rifled her purse. Having done this, and without further ado, they drove away. Fortunately, genuine rescuers arrived and took them to the nearest hospital. Both recovered, worse only for their losses and bruises, not to mention their altered opinions of the human race, the first professed rescuers in particular.

More recent than that was an adventure of a young man, a patient of mine, who fell victim to a physician-false Samaritan. Suffering the terminal effects of germinal cell carcinoma resistant to all therapy, he had gone the full course—diagnosis, treatment, relapses, treatment failures, and consultation with renowned cancer authorities in two university centers. Now taking large doses of opiates, he was desperate. Told of a physician who administered Laetrile, he and his wife traveled to a town where this

(continued)

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man practices, albeit without hospital privileges. There they were seen and, without the benefits of examination or clinical records, were advised that he would need to stop taking all of his pain-relieving medications. After being directed to a local motel for lodgings, the patient was told to report every day for an intravenous injection of Laetrile—and by the way, the charge was \$4000 per week, payable in advance. Because his wife had to return to her job, she left him there to complete his course of therapy while spending his pain-ridden days and nights alone in a motel room. After returning to his room on the morning of the second injection, he had acute respiratory distress. He called the physician but was told that he would not be given anything for relief and that he was forbidden to take any pain medication. He then called his wife who drove several hours to rescue and bring him home. He lived 2 more weeks before dying of his malignancy.

Humanity has probably been cursed with malevolent opportunists since the beginning of the race. Medical history is filled with them and their exploits. For centuries, many involved in such activities were to a certain degree honest, or at least their ignorant endeavors provided some aid and comfort. Many were guilty of obvious and blatant efforts to make a profit no matter how devious or obscene the means. Honest or dishonest, whatever the case, one would think that mankind, through education, sophistication, and everyday exposure to technologic truth and knowledge, should have become immune to the allure of charlatanry and its false promises. Perhaps this is merely wishful thinking, because the infractions persist; herbal potions, diets, concoctions to rub on, smell, or swallow, injected toxins, and fancy machines all attract victims like moths to a flame. No economic class or educational level has been totally resistant to the Siren's call of promised cure or early ablation. Victims of humanity's frailties and nature's curses, sufferers of afflictions grievously real and ridiculously imagined, they present themselves to the reception desks of untold numbers of fakirs and quacks, there to purchase the precious commodity Hope, albeit false. That patients and families willingly fall prey to such scheming is not to be criticized. Such is our nature that any floating object promises rescue to a drowning person, and cancer patients become the most likely, perhaps the most gullible victims. Faced with the bleak, painful, often disfiguring ordeals of oncology, they frequently search for any promise of relief.

Ignorance, often cited as the overwhelming pre-

requisite for victimization, is not a common denominator. Many of these weary travelers on the road of pain are well educated, even sophisticated members of society. That they are willingly, even knowingly fleeced at the hands of charlatans is not the tragedy. The tragedy is the continued prevalence of it all—the availability of worthless treatments, the use of potentially harmful preparations, the advice to abandon competent care, and most of all, the extraction of criminally exorbitant fees by these modern-day holdup artists on the roads of pain and suffering. As physicians we have a compelling obligation to put those charlatans out of business. In not doing so, we see the highwayman, witness his deed, and look the other way.

Laetrile, the offending substance in this case, is no longer legal in any of these United States (Oklahoma repealed the law legalizing it in November 1989); but it is still being used. For that matter, so are megavitamins, macrobiotic diets, and other harmful or useless nostrums. It has always been so, and as long as there are victims to fleece, thus will it always be.

"Quackery does not die easily. Exposure of the frauds perpetrated by quacks and nostrum vendors do good only to the extent that such exposes educate the public."<sup>1</sup> These words of 80 years ago are no less true now than they were then. Unfortunately, educational exposes too often become the flotsam and jetsam of news reporting, lost among descriptions of sordid crimes and political miscreants not worth the public consideration that quackery so richly deserves. The highwaymen still ride, their victims legion, their roads poorly policed, their crimes undeterred.

—O.W. Dehart, MD  
Vinita

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**Annual Meeting  
OSMA House of Delegates  
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Tulsa Westin Hotel**



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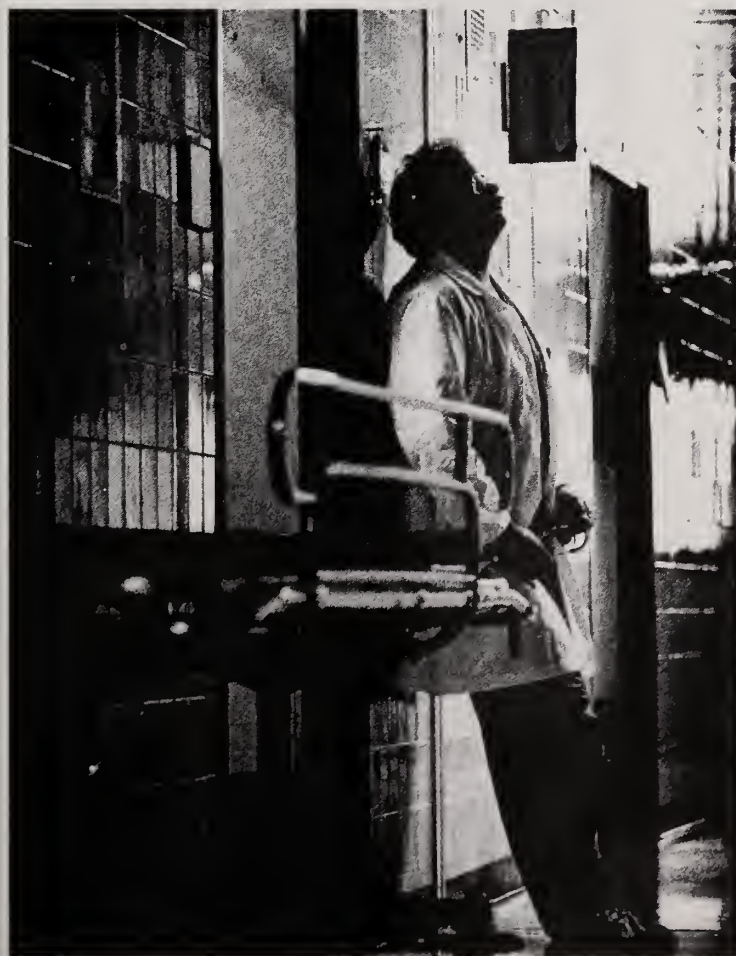
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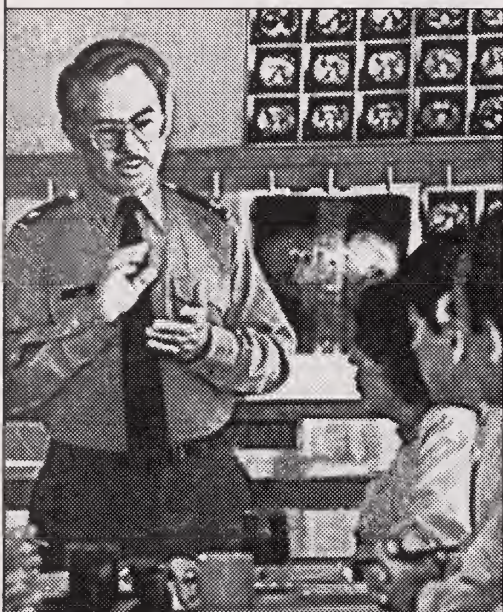
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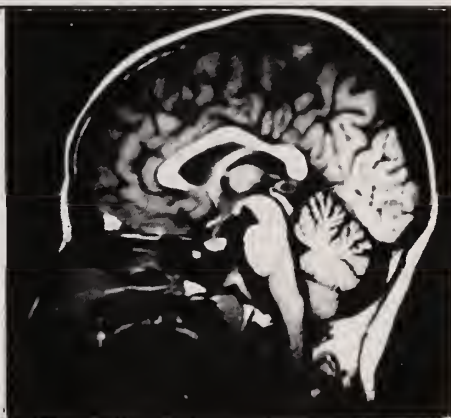


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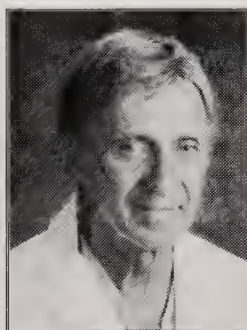
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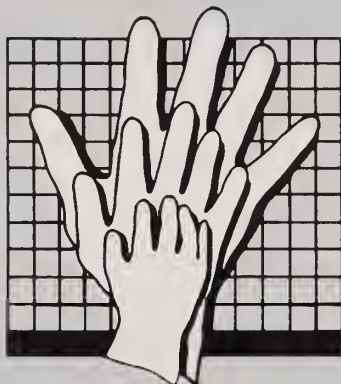
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### Style

All manuscripts should adhere to the style adopted by the American Medical Association as illustrated in *JAMA* and detailed in the AMA's *Manual of Style*. An abstract of 150 words or less should accompany each paper and should state the exact question considered, the key points of methodology and success of execution, the key findings, and the conclusions directly supported by these findings. Footnotes, bibliographies, and legends for illustrations should be on separate sheets. References are to be listed in the order of their appearance in the article.

### Illustrations

Illustrations other than the author's will not be accepted for publication unless accompanied by written permission from the original source. Illustrations should be labeled with the author's name and must be numbered in the order in which they are referred to in the article. the quality of all illustrations must be in keeping with the quality of the magazine.

### Reprints

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■ **Two Oklahoma physicians are quoted in** *Nation's Business* (Nov. '92) in an article on CLIA regulations. Perry A. Lambird, MD, Oklahoma City pathologist and OSMA past president, and G.S. Gill, MD, Elk City family practitioner, comment on the effect of the new regulations. "All that [the law] has done is mandate a tremendous amount of paperwork," says Dr. Lambird, citing examples in his practice. Dr. Sill says he discontinued his lab work last January because "I could see increasing regulation coming down the pike. I'm a sole physician, and it would have been impossible for me to comply with and meet the financial expense... and yet break even."

■ **The Oklahoma State Medical Association** Hospital Medical Staff Section will host a one-day conference on hospital staff bylaws, credentialing, and peer review on Saturday, January 30, 1993. The meeting will be held at the Oklahoma City Marriott Hotel. Watch for details in the mail or call Robert Baker at the OSMA, 405-843-9571 or 1-800-522-9452.

■ **Jess Hesley, MD, clinical professor and vice-chairman,** Department of Pathology, University of Oklahoma College of Medicine—Tulsa, is being recognized for his contributions with a special lecture series to be established in his name. In addition, the renovated pathology department library at the University of Oklahoma Health Sciences Center in Oklahoma City will be officially renamed the Jess Hensley Pathology Library. Dr. Hensley is former chairman of the OUHSC department.

■ **Oklahoma City internist M. Boyd Shook, MD,** has been elected to serve another three-year term as a trustee of the American Society of Internal Medicine (ASIM). He was first elected to the ASIM Board of Trustees in 1987. Dr. Shook also is chairman of ASIM's Long Range Planning Committee.

■ **Figures released by the American Medical Political Action Committee (AMPAC)** this year indicate Oklahoma ranks third in the nation in the percentage of eligible voters who are registered. According to the report, 91.47% of those eligible to vote in Oklahoma were registered to do so. Maine ranked first (95.72%) and Minnesota ranked second

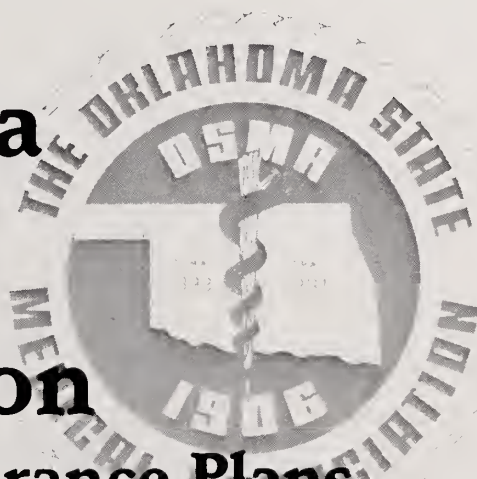
(92.28%). The national average (excluding North Dakota and Wisconsin, for which figures were not available) was only 69.17%.

■ **There's a mystery in the OSMA JOURNAL** library. Recently the managing editor noticed there is no 1917 volume in the otherwise complete set of bound JOURNALS housed in the library. To date no one has been able to say for sure whether such a volume ever existed or what might have happened to it. Assuming there was such a volume, it probably would be approximately 7"  $\times$  10", about an inch thick, and bound in either brown leather or green hardcover. The book represents a one-of-a-kind irreplaceable piece of JOURNAL and OSMA history. If you know where it is or happen to come across it, please call Susan Records, 405-843-9571 or 1-800-522-9452.

■ **Oklahoma City gynecologist Schales L. Atkinson, MD,** and his staff have launched their own attack on the tobacco industry. Pages bearing the following message have been stapled over every tobacco ad in every magazine in their office: "To our patient: This page is a cover-up for an advertisement for a tobacco product. We feel that there is no greater destroyer of good health than smoking cigarettes, cigars, pipes, and chewing tobacco. Initially we were not going to subscribe to any magazine that advertised these products, but that would deprive you of the enjoyment of most of the popular magazines. In covering up the advertisement, we are in our own small way saying 'up yours' to the tobacco industry. —Schales L. Atkinson, MD, and Staff."

■ **Reminder to OSMA members:** The OSMA Board of Trustees is now accepting nominations for both the 1993 Donald J. Blair Friend of Medicine Award and the Wyeth-Ayerst Physician Award for Community Service. The Blair award recognizes a lay person who has rendered outstanding service and support to the medical profession, and the Community Service award recognizes a physician for contributions to his or her community. Nominations should be directed to the Board of Trustees or OSMA executive offices, 601 Northwest Expressway, Oklahoma City, OK 73118. Winners will be selected at the board's meeting in February and announced at the Annual Meeting of the OSMA House of Delegates in April. □

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